	A	B	C	D	E	F	G	H	L	P	T	U	V
1	**Scientific_Name**	**Common_Name**	**Grouping**	**Type**	**Tier**	**COR**	**Habitats**	**Threat_Code**	**Threat_Description**	**Threat_Long**	**Actions**	**Working_Lands**	**Notes**
2	Pholcus jusahi	A cave cellar spider	Terrestrial Invertebrate	Araneae	I	c	Caves and Karst	1.1.2, 11.3.3,	Low-Density Housing Areas / Gradual Temperature Change /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / e.g., altered sex-ratio in species relying upon a temperature dependent sex determination, reduction of dissolved oxygen that is available to fish species, earlier ice-free dates, thawing of permafrost affecting bird breeding sites. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), This is a cave / karst species which is threatened by increasing worldwide temperatures caused by climate change (Mammola et al. 2018). (11.3.3)		
3	Nesticus mimus	A cave cobweb spider	Terrestrial Invertebrate	Araneae	I	c	Caves and Karst	1.1.2, 11.3.3,	Low-Density Housing Areas / Gradual Temperature Change /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / e.g., altered sex-ratio in species relying upon a temperature dependent sex determination, reduction of dissolved oxygen that is available to fish species, earlier ice-free dates, thawing of permafrost affecting bird breeding sites. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2) This is a cave / karst species which is threatened by increasing worldwide temperatures caused by climate change (Mammola et al. 2018). (11.3.3)		
4	Nesticus paynei	A cave cobweb spider	Terrestrial Invertebrate	Araneae	I	c	Caves and Karst	1.1.2, 11.3.3,	Low-Density Housing Areas / Gradual Temperature Change /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / e.g., altered sex-ratio in species relying upon a temperature dependent sex determination, reduction of dissolved oxygen that is available to fish species, earlier ice-free dates, thawing of permafrost affecting bird breeding sites. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2) This is a cave / karst species which is threatened by increasing worldwide temperatures caused by climate change (Mammola et al. 2018). (11.3.3)		
5	Litocampa hoffmani	A cave dipluran (Pulaski/Whythe)	Terrestrial Invertebrate	Entognatha	II	c	Caves and Karst	1.1.2	Low-Density Housing Areas / /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2)		
6	Traegaardhia paralleloseta	A cave mite	Terrestrial Invertebrate	Trombidiformes	I	c	Caves and Karst	1.1.2	Low-Density Housing Areas / /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2)		
7	Pseudotremia deprehendor	A cave obligate millipede	Terrestrial Invertebrate	Chordeumatida	II	c	Caves and Karst	1.1.2, 11.3.3,	Low-Density Housing Areas / Gradual Temperature Change /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / e.g., altered sex-ratio in species relying upon a temperature dependent sex determination, reduction of dissolved oxygen that is available to fish species, earlier ice-free dates, thawing of permafrost affecting bird breeding sites. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), This is a cave / karst species which is threatened by increasing worldwide temperatures caused by climate change (Mammola et al. 2018). (11.3.3)		
8	Apochthonius coecus	A cave pseudoscorpion	Terrestrial Invertebrate	Pseudoscorpiones	I	b	Caves and Karst	1.1.2	Low-Density Housing Areas / /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2)		
9	Apochthonius holsingeri	A cave pseudoscorpion	Terrestrial Invertebrate	Pseudoscorpiones	I	b	Caves and Karst	1.1.2	Low-Density Housing Areas / /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2)		
10	Chitrella superba	A cave pseudoscorpion	Terrestrial Invertebrate	Pseudoscorpiones	I	b	Caves and Karst	1.1.2	Low-Density Housing Areas / /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2)		
11	Kleptochthonius anophthalmus	A cave pseudoscorpion	Terrestrial Invertebrate	Pseudoscorpiones	I	b	Caves and Karst	1.1.2	Low-Density Housing Areas / /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2)		

	A	B	C	D	E	F	G	H	L	P	T	U	V
1	**Scientific_Name**	**Common_Name**	**Grouping**	**Type**	**Tier**	**COR**	**Habitats**	**Threat_Code**	**Threat_Description**	**Threat_Long**	**Actions**	**Working_Lands**	**Notes**
12	Kleptochthonius binoculatus	A cave pseudoscorpion	Terrestrial Invertebrate	Pseudoscorpiones	I	b	Caves and Karst	1.1.2	Low-Density Housing Areas / /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2)		
13	Kleptochthonius proximosetus	A cave pseudoscorpion	Terrestrial Invertebrate	Pseudoscorpiones	I	b	Caves and Karst	1.1.2	Low-Density Housing Areas / /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2)		
14	Kleptochthonius regulus	A cave pseudoscorpion	Terrestrial Invertebrate	Pseudoscorpiones	I	b	Caves and Karst	1.1.2	Low-Density Housing Areas / /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2)		
15	Kleptochthonius similis	A cave pseudoscorpion	Terrestrial Invertebrate	Pseudoscorpiones	I	b	Caves and Karst	1.1.2	Low-Density Housing Areas / /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2)		
16	Mundochthonius holsingeri	A cave pseudoscorpion	Terrestrial Invertebrate	Pseudoscorpiones	I	b	Caves and Karst	1.1.2	Low-Density Housing Areas / /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2)		
17	Anthrobia mammouthia	A cave spider	Terrestrial Invertebrate	Araneae	IV	c	Caves and Karst	1.1.2, 11.3.3,	Low-Density Housing Areas / Gradual Temperature Change /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / e.g., altered sex-ratio in species relying upon a temperature dependent sex determination, reduction of dissolved oxygen that is available to fish species, earlier ice-free dates, thawing of permafrost affecting bird breeding sites. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), This is a cave / karst species which is threatened by increasing worldwide temperatures caused by climate change (Mammola et al. 2018.) (11.3.3)		
18	Islandiana muma	A cave spider	Terrestrial Invertebrate	Araneae	I	c	Caves and Karst	1.1.2, 11.3.3,	Low-Density Housing Areas / Gradual Temperature Change /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / e.g., altered sex-ratio in species relying upon a temperature dependent sex determination, reduction of dissolved oxygen that is available to fish species, earlier ice-free dates, thawing of permafrost affecting bird breeding sites. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), This is a cave / karst species which is threatened by increasing worldwide temperatures caused by climate change (Mammola et al. 2018). (11.3.3)		
19	Ceraticelus savannus	A dwarf weaver	Terrestrial Invertebrate	Araneae	IV	c	Forests and Woodlands	1.1.2	Low-Density Housing Areas / /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / /	Habitat protection is essential, so cooperation and education of land owners should be high priority. Avoid clearcutting suitable and/or occupied habitats. (1.1.2)		
20	Coloncus siou	A dwarf weaver	Terrestrial Invertebrate	Araneae	II	c	Forests and Woodlands	1.1.2	Low-Density Housing Areas / /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / /	A deep forest and moss specialist, this species is likely threatened by habitat loss with a reduction in mature forests. Very rare species. (1.1.2)		
21	Diplocentria hiberna	A dwarf weaver	Terrestrial Invertebrate	Araneae	II	c	Forests and Woodlands, Other Subterranean, Shorelines	1.1.2	Low-Density Housing Areas / /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / /	A deep forest and possibly subterranean specialist, this species is likely threatened by habitat loss with a reduction in mature forests. (1.1.2)		
22	Gnathonargus unicorn	A dwarf weaver	Terrestrial Invertebrate	Araneae	II	c	Forests and Woodlands	1.1.2	Low-Density Housing Areas / /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / /	A deep forest and possibly subterranean specialist, this species is likely threatened by habitat loss with a reduction in mature forests. (1.1.2)		

	A	B	C	D	E	F	G	H	L	P	T	U	V
1	**Scientific_Name**	**Common_Name**	**Grouping**	**Type**	**Tier**	**COR**	**Habitats**	**Threat_Code**	**Threat_Description**	**Threat_Long**	**Actions**	**Working_Lands**	**Notes**
23	Horcotes uncinatus	A dwarf weaver	Terrestrial Invertebrate	Araneae	II	c	Forests and Woodlands	1.1.2	Low-Density Housing Areas / /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / /	A deep forest and possibly subterranean specialist, this species is likely threatened by habitat loss with a reduction in mature forests. (1.1.2)		
24	Maso politus	A dwarf weaver	Terrestrial Invertebrate	Araneae	II	c	Forests and Woodlands	5.3.1	Complete Removal of the Forest Cove / /	Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). / /	A pine forest specialist that is likely threatened with habitat loss with a reduction in mature pine forests. (5.3.1)		
25	Oedothorax maximus	A dwarf weaver	Terrestrial Invertebrate	Araneae	II	c	Caves and Karst	11.3.3	Gradual Temperature Change / /	e.g., altered sex-ratio in species relying upon a temperature dependent sex determination, reduction of dissolved oxygen that is available to fish species, earlier ice-free dates, thawing of permafrost affecting bird breeding sites. / /	This is a cave / karst species which is threatened by increasing worldwide temperatures caused by climate change (Mammola et al. 2018).(11.3.3)		
26	Barronopsis jeffersi	A funnel-web spider	Terrestrial Invertebrate	Araneae	III	c	Forests and Woodlands, Riparian and Floodplains, Non-tidal Wetlands	1.1.2	Low-Density Housing Areas / /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2)		
27	Aniulus orientalis	A millipede	Terrestrial Invertebrate	Julida	IV	c	Forests and Woodlands, Riparian and Floodplains	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2) Complete removal of forest habitat for logging would render the habitat non-viable for this species. (5.3.1)		
28	Appalachioria calcaria	A millipede	Terrestrial Invertebrate	Polydesmida	III	c	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Complete removal of forest habitat for logging would render the habitat non-viable for this species.(5.3.1)		
29	Appalachioria hamata	A millipede	Terrestrial Invertebrate	Polydesmida	III	c	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Complete removal of forest habitat for logging would render the habitat non-viable for this species.(5.3.1)		
30	Appalachioria separanda	A millipede	Terrestrial Invertebrate	Polydesmida	IV	c	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Complete removal of forest habitat for logging would render the habitat non-viable for this species.(5.3.1)		
31	Appalachioria versicolor	A millipede	Terrestrial Invertebrate	Polydesmida	IV	c	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Complete removal of forest habitat for logging would render the habitat non-viable for this species.(5.3.1)		
32	Brachoria dentata	A millipede	Terrestrial Invertebrate	Polydesmida	III	c	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Complete removal of forest habitat for logging would render the habitat non-viable for this species.(5.3.1)		
33	Brachoria insolita	A millipede	Terrestrial Invertebrate	Polydesmida	I	c	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Complete removal of forest habitat for logging would render the habitat non-viable for this species.(5.3.1)		

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1	Scientific_Name	Common_Name	Grouping	Type	Tier	COR	Habitats	Threat_Code	Threat_Description	Threat_Long	Actions	Working_Lands	Notes
34	Daphnedesmus coronata	A millipede	Terrestrial Invertebrate	Polydesmida	III	c	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Complete removal of forest habitat for logging would render the habitat non-viable for this species.(5.3.1)		
35	Daphnedesmus fowleri	A millipede	Terrestrial Invertebrate	Polydesmida	III	b	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Complete removal of forest habitat for logging would render the habitat non-viable for this species.(5.3.1)		
36	Desmonus earlei	A millipede	Terrestrial Invertebrate	Polydesmida	IV	c	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Complete removal of forest habitat for logging would render the habitat non-viable for this species.(5.3.1)		
37	Nannaria morrisoni	A millipede	Terrestrial Invertebrate	Polydesmida	III	c	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Complete removal of forest habitat for logging would render the habitat non-viable for this species.(5.3.1)		
38	Nannaria simplex	A millipede	Terrestrial Invertebrate	Polydesmida	II	c	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Complete removal of forest habitat for logging would render the habitat non-viable for this species.(5.3.1)		
39	Nannaria wilsoni	A millipede	Terrestrial Invertebrate	Polydesmida	II	c	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Complete removal of forest habitat for logging would render the habitat non-viable for this species.(5.3.1)		
40	Okeanobates americanus	A millipede	Terrestrial Invertebrate	Julida	IV	c	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2) Complete removal of forest habitat for logging would render the habitat non-viable for this species. (5.3.1)		
41	Onomeris sinuata	A millipede	Terrestrial Invertebrate	Glomerida	IV	c	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Complete removal of forest habitat for logging would render the habitat non-viable for this species. (5.3.1)		
42	Petaserpes strictus	A millipede	Terrestrial Invertebrate	Polyzoniida	IV	c	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Complete removal of forest habitat for logging would render the habitat non-viable for this species.(5.3.1)		

	A	B	C	D	E	F	G	H	L	P	T	U	V
1	**Scientific_Name**	**Common_Name**	**Grouping**	**Type**	**Tier**	**COR**	**Habitats**	**Threat_Code**	**Threat_Description**	**Threat_Long**	**Actions**	**Working_Lands**	**Notes**
43	Pseudopolydesmus paludicolous	A millipede	Terrestrial Invertebrate	Polydesmida	III	c	Forests and Woodlands, Beaches and Dunes	1.1.2, 11.1.1,	Low-Density Housing Areas / Changes in Vegetation Communities /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Major changes in an ecosystem resulting in changes to vegetation communities distinguished from natural vegetation succession, which may threaten open-country species (Threat 7.3.2). E.g., migration of deciduous trees towards the boreal forest, rising sea levels, desertification, thawing permafrost (in tundra), coral bleaching. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), May be susceptible to rising sea levels resulting from climate change.(11.1.1)		
44	Pseudotremia armesi	A millipede	Terrestrial Invertebrate	Chordeumatida	II	c	Caves and Karst	1.1.2, 11.3.3,	Low-Density Housing Areas / Gradual Temperature Change /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / e.g., altered sex-ratio in species relying upon a temperature dependent sex determination, reduction of dissolved oxygen that is available to fish species, earlier ice-free dates, thawing of permafrost affecting bird breeding sites. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), This is a cave / karst species which is threatened by increasing worldwide temperatures caused by climate change (Mammola et al. 2018). (11.3.3)		
45	Pseudotremia momus	A millipede	Terrestrial Invertebrate	Chordeumatida	II	c	Caves and Karst	1.1.2, 11.3.3,	Low-Density Housing Areas / Gradual Temperature Change /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / e.g., altered sex-ratio in species relying upon a temperature dependent sex determination, reduction of dissolved oxygen that is available to fish species, earlier ice-free dates, thawing of permafrost affecting bird breeding sites. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), This is a cave / karst species which is threatened by increasing worldwide temperatures caused by climate change (Mammola et al. 2018). (11.3.3)		
46	Pseudotremia sublevis	A millipede	Terrestrial Invertebrate	Chordeumatida	II	c	Caves and Karst	1.1.2, 11.3.3,	Low-Density Housing Areas / Gradual Temperature Change /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / e.g., altered sex-ratio in species relying upon a temperature dependent sex determination, reduction of dissolved oxygen that is available to fish species, earlier ice-free dates, thawing of permafrost affecting bird breeding sites. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), This is a cave / karst species which is threatened by increasing worldwide temperatures caused by climate change (Mammola et al. 2018). (11.3.3)		
47	Pseudotremia tuberculata	A millipede	Terrestrial Invertebrate	Chordeumatida	II	c	Caves and Karst	1.1.2, 11.3.3,	Low-Density Housing Areas / Gradual Temperature Change /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / e.g., altered sex-ratio in species relying upon a temperature dependent sex determination, reduction of dissolved oxygen that is available to fish species, earlier ice-free dates, thawing of permafrost affecting bird breeding sites. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), This is a cave / karst species which is threatened by increasing worldwide temperatures caused by climate change (Mammola et al. 2018). (11.3.3)		
48	Pseudotremia valga	A millipede	Terrestrial Invertebrate	Chordeumatida	II	c	Caves and Karst	1.1.2, 11.3.3,	Low-Density Housing Areas / Gradual Temperature Change /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / e.g., altered sex-ratio in species relying upon a temperature dependent sex determination, reduction of dissolved oxygen that is available to fish species, earlier ice-free dates, thawing of permafrost affecting bird breeding sites. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), This is a cave / karst species which is threatened by increasing worldwide temperatures caused by climate change (Mammola et al. 2018). (11.3.3)		
49	Rudiloria kleinpeteri	A millipede	Terrestrial Invertebrate	Polydesmida	IV	c	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Complete removal of forest habitat for logging would render the habitat non-viable for this species.(5.3.1)		
50	Rudiloria tortua	A millipede	Terrestrial Invertebrate	Polydesmida	II	c	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Complete removal of forest habitat for logging would render the habitat non-viable for this species.(5.3.1)		

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1	**Scientific_Name**	**Common_Name**	**Grouping**	**Type**	**Tier**	**COR**	**Habitats**	**Threat_Code**	**Threat_Description**	**Threat_Long**	**Actions**	**Working_Lands**	**Notes**
51	Scytonotus virginicus	A millipede	Terrestrial Invertebrate	Polydesmida	IV	c	Forests and Woodlands	1.1.2, 11.1.1,	Low-Density Housing Areas / Changes in Vegetation Communities /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Major changes in an ecosystem resulting in changes to vegetation communities distinguished from natural vegetation succession, which may threaten open-country species (Threat 7.3.2). E.g., migration of deciduous trees towards the boreal forest, rising sea levels, desertification, thawing permafrost (in tundra), coral bleaching. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2),Blue Ridge endemic; may be susceptible to rising temperatures from climate change. (11.1.1)		
52	Semionellus placidus	A millipede	Terrestrial Invertebrate	Polydesmida	IV	c	Forests and Woodlands	1.1.2, 11.1.1,	Low-Density Housing Areas / Changes in Vegetation Communities /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Major changes in an ecosystem resulting in changes to vegetation communities distinguished from natural vegetation succession, which may threaten open-country species (Threat 7.3.2). E.g., migration of deciduous trees towards the boreal forest, rising sea levels, desertification, thawing permafrost (in tundra), coral bleaching. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), High elevation species that may be susceptible to rising temperatures from climate change. (11.1.1)		
53	Zygonopus packardi	A millipede	Terrestrial Invertebrate	Chordeumatida	IV	c	n/a	1.1.2, 11.3.3,	Low-Density Housing Areas / Gradual Temperature Change /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / e.g., altered sex-ratio in species relying upon a temperature dependent sex determination, reduction of dissolved oxygen that is available to fish species, earlier ice-free dates, thawing of permafrost affecting bird breeding sites. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), This is a cave / karst species which is threatened by increasing worldwide temperatures caused by climate change (Mammola et al. 2018). (11.3.3)		
54	Anthrobia coylei	A sheetweb weaver	Terrestrial Invertebrate	Araneae	I	c	Forests and Woodlands	1.1.2, 11.3.3,	Low-Density Housing Areas / Gradual Temperature Change /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / e.g., altered sex-ratio in species relying upon a temperature dependent sex determination, reduction of dissolved oxygen that is available to fish species, earlier ice-free dates, thawing of permafrost affecting bird breeding sites. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), This is a cave / karst species which is threatened by increasing worldwide temperatures caused by climate change (Mammola et al. 2018. Climate change may drive cave spiders to extinction. Ecography 41(1): 233-243). (11.3.3)		
55	Goneatara eranistes	A shovel-faced spider	Terrestrial Invertebrate	Araneae	I	c	Glades and Barrens	1.1.2	Low-Density Housing Areas / /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / /	A deep forest and possibly subterranean specialist, this species is likely threatened by habitat loss with a reduction in mature forests. (1.1.2)		
56	Cybaeopsis hoplomachus	A tangled nest spider	Terrestrial Invertebrate	Araneae	III	c	Forests and Woodlands, Shorelines	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), A deep forest specialist in southern Appalachia that is likely threatened with habitat loss with a reduction in mature forests. (5.3.1)		
57	Castianeira trilineata	A two-clawed hunting spider	Terrestrial Invertebrate	Araneae	IV	c	Forests and Woodlands	1.1.2	Low-Density Housing Areas / /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2)		
58	Liocranoides coylei	A zoropsid spider	Terrestrial Invertebrate	Araneae	I	c	Caves and Karst	11.3.3	Gradual Temperature Change / /	e.g., altered sex-ratio in species relying upon a temperature dependent sex determination, reduction of dissolved oxygen that is available to fish species, earlier ice-free dates, thawing of permafrost affecting bird breeding sites. / /	This is a cave / karst species which is threatened by increasing worldwide temperatures caused by climate change (Mammola et al. 2018). (11.3.3)		
59	Liocranoides unicolor	A zoropsid spider	Terrestrial Invertebrate	Araneae	I	c	Caves and Karst	11.3.3	Gradual Temperature Change / /	e.g., altered sex-ratio in species relying upon a temperature dependent sex determination, reduction of dissolved oxygen that is available to fish species, earlier ice-free dates, thawing of permafrost affecting bird breeding sites. / /	This is a cave / karst species which is threatened by increasing worldwide temperatures caused by climate change (Mammola et al. 2018). (11.3.3)		

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60	Conotyla aeto	Aeto millipede	Terrestrial Invertebrate	Chordeumatida	II	c	Forests and Woodlands	1.1.2, 11.3.3,	Low-Density Housing Areas / Gradual Temperature Change /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / e.g., altered sex-ratio in species relying upon a temperature dependent sex determination, reduction of dissolved oxygen that is available to fish species, earlier ice-free dates, thawing of permafrost affecting bird breeding sites. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), A cold weather-active species that may be susceptible to rising temperatures from climate change. (11.3.3)		
61	Gastrodonta fonticula	Appalachia bellytooth	Terrestrial Invertebrate	Terr. Snail	III	a	Forests and Woodlands,	5.3.1, 1.1,	Complete Removal of the Forest Cove / Housing and Urban Areas /	Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). / Anything that is related to or integrated with urban or housing structures. Urban areas (cities), suburbs, villages, cottages, shopping areas, offices, schools, hospitals, and urban parks, among others. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. Avoid clearcutting suitable and/or occupied habitats. (5.3.1), Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs. (1.1)		
62	Sphodros atlanticus	Atlantic purse-web spider	Terrestrial Invertebrate	Araneae	IV	c	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Slow-growing mygalomorph purse web spider that may live for multiple years with a patchy distribution. Requires undisturbed habitat for survival, hunting, and breeding. Threatened by habitat loss - largely of mature forests. (5.3.1)		
63	Triodopsis fraudulenta	Baffled three-tooth	Terrestrial Invertebrate	Terr. Snail	IV	a	Forests and Woodlands, Grasslands, Transportation Networks	5.3.1, 1.1, 9.3.3	Complete Removal of the Forest Cove / Housing and Urban Areas / Herbicides and Pesticides	Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). / Anything that is related to or integrated with urban or housing structures. Urban areas (cities), suburbs, villages, cottages, shopping areas, offices, schools, hospitals, and urban parks, among others. / Includes the use of inputs for controlling crop pests. E.g., herbicides, insecticides, fungicides.	Habitat protection is essential, so cooperation and education of land owners should be high priority. Avoid clearcutting suitable and/or occupied habitats. (5.3.1), Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs. (1.1), Coordinate with the Virginia Dept of Transportation and landowners where the snail is present, to minimize the use of chemicals along the right-of-way and on property where the snail is present, particularly herbicide use along the roadside. (9.3.3)	Life Stage - All; Type - mixed hardwoods; - Substrate - leaf litter in duff and turf habitats, and near logs; Features - along roadsides	
64	Mesodon andrewsae	Balsam globe	Terrestrial Invertebrate	Terr. Snail	I	a	Forests and Woodlands, Boreal Forests	2.2.1, 5.3.1, 1.1	Plantation of Pulpwood / Complete Removal of the Forest Cove / Housing and Urban Areas	Cultivation of hybrid poplars and other species that are used for pulp production. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). / Anything that is related to or integrated with urban or housing structures. Urban areas (cities), suburbs, villages, cottages, shopping areas, offices, schools, hospitals, and urban parks, among others.	Habitat protection is essential, so cooperation and education of land owners should be high priority. Limit conversion of forested lands to plantation production.(2.2.1), Habitat protection is essential, so cooperation and education of land owners should be high priority. Avoid clearcutting suitable and/or occupied habitats. (5.3.1), Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs. (1.1)		
65	Anguispira kochi	Banded globe (tigersnail)	Terrestrial Invertebrate	Terr. Snail	IV	a	Forests and Woodlands, Cliffs and Talus, Riparian and Floodplains	5.3.1, 1.1,	Complete Removal of the Forest Cove / Housing and Urban Areas /	Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). / Anything that is related to or integrated with urban or housing structures. Urban areas (cities), suburbs, villages, cottages, shopping areas, offices, schools, hospitals, and urban parks, among others. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. Avoid clearcutting suitable and/or occupied habitats. (5.3.1), Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs. (1.1)		

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66	Paravitrea seradens	Barred supercoil	Terrestrial Invertebrate	Terr. Snail	II	a	Forests and Woodlands,	2.2.1, 5.3.1, 1.1	Plantation of Pulpwood / Complete Removal of the Forest Cove / Housing and Urban Areas	Cultivation of hybrid poplars and other species that are used for pulp production. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). / Anything that is related to or integrated with urban or housing structures. Urban areas (cities), suburbs, villages, cottages, shopping areas, offices, schools, hospitals, and urban parks, among others.	Habitat protection is essential, so cooperation and education of land owners should be high priority. Limit conversion of forested lands to plantation production.(2.2.1), Habitat protection is essential, so cooperation and education of land owners should be high priority. Avoid clearcutting suitable and/or occupied habitats. (5.3.1), Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs. (1.1)		
67	Ventridens coelaxis	Bidentate dome	Terrestrial Invertebrate	Terr. Snail	II	a	Forests and Woodlands, Boreal Forests	5.3.1, 11.3.3, 1.1	Complete Removal of the Forest Cove / Gradual Temperature Change / Housing and Urban Areas	Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). / e.g., altered sex-ratio in species relying upon a temperature dependent sex determination, reduction of dissolved oxygen that is available to fish species, earlier ice-free dates, thawing of permafrost affecting bird breeding sites. / Anything that is related to or integrated with urban or housing structures. Urban areas (cities), suburbs, villages, cottages, shopping areas, offices, schools, hospitals, and urban parks, among others.	Habitat protection is essential, so cooperation and education of land owners should be high priority. Avoid clearcutting suitable and/or occupied habitats.(5.3.1), May be susceptible to rising temperatures from climate change. Implement large-scale management and conservation actions to minimize and reverse climate change. (11.3.3), Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs. (1.1)		
68	Appalachioria falcifera	Big cedar creek millipede	Terrestrial Invertebrate	Polydesmida	II	c	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Complete removal of forest habitat for logging would render the habitat non-viable for this species.(5.3.1)		
69	Pallifera hemphillii	Black mantleslug	Terrestrial Invertebrate	Terr. Snail	II	a	Boreal Forest	2.2.1, 5.3.1, 1.1	Plantation of Pulpwood / Complete Removal of the Forest Cove / Housing and Urban Areas	Cultivation of hybrid poplars and other species that are used for pulp production. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). / Anything that is related to or integrated with urban or housing structures. Urban areas (cities), suburbs, villages, cottages, shopping areas, offices, schools, hospitals, and urban parks, among others.	Habitat protection is essential, so cooperation and education of land owners should be high priority. Limit conversion of forested lands to plantation production.(2.2.1), Habitat protection is essential, so cooperation and education of land owners should be high priority. Avoid clearcutting suitable and/or occupied habitats. (5.3.1), Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs. (1.1)		
70	Sphodros niger	Black purse-web spider	Terrestrial Invertebrate	Araneae	IV	c	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Slow-growing mygalomorph purse web spider that may live for multiple years with a patchy distribution. Requires undisturbed habitat for survival, hunting, and breeding. Threatened by habitat loss - largely of mature forests. (5.3.1)		
71	Megapallifera wetherbyi	Blotchy mantleslug	Terrestrial Invertebrate	Terr. Snail	II	a	Forests and Woodlands, Cliffs and Talus, Riparian and Floodplains	5.3.1, 1.1,	Complete Removal of the Forest Cove / Housing and Urban Areas /	Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). / Anything that is related to or integrated with urban or housing structures. Urban areas (cities), suburbs, villages, cottages, shopping areas, offices, schools, hospitals, and urban parks, among others. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. Avoid clearcutting suitable and/or occupied habitats. (5.3.1), Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs. (1.1)		

	A	B	C	D	E	F	G	H	L	P	T	U	V
1	**Scientific_Name**	**Common_Name**	**Grouping**	**Type**	**Tier**	**COR**	**Habitats**	**Threat_Code**	**Threat_Description**	**Threat_Long**	**Actions**	**Working_Lands**	**Notes**
72	Oxyloma retusum	Blunt ambersnail	Terrestrial Invertebrate	Terr. Snail	IV	a	Shorelines, Non-Tidal Wetlands	1.1.1, 11.1.1,	Dense Housing and Urban Areas / Changes in Vegetation Communities /	Medium- to high-density development for residential use and buildings for related services. Allows very little to no maintenance of ecological functions. E.g., urban areas, suburbs, villages, schools, libraries, seniors' housing, hospitals / Major changes in an ecosystem resulting in changes to vegetation communities distinguished from natural vegetation succession, which may threaten open-country species (Threat 7.3.2). E.g., migration of deciduous trees towards the boreal forest, rising sea levels, desertification, thawing permafrost (in tundra), coral bleaching. /	Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs, specifically wetlands and shorleine habitats. (1.1.1), May be susceptible to rising sea level from climate change and impacts to shoreline habitat. Implement large-scale management and conservation actions to minimize and reverse climate change. (11.1.1)		
73	Appalachioria bondi	Bond's Appalachian Mimic Millipede	Terrestrial Invertebrate	Polydesmida	II	b	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Complete removal of forest habitat for logging would render the habitat non-viable for this species.(5.3.1)		
74	Sigmoria brooksi	Brooks millipede	Terrestrial Invertebrate	Polydesmida	II	c	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Complete removal of forest habitat for logging would render the habitat non-viable for this species.(5.3.1)		
75	Inflectarius kalmianus	Brown globelet	Terrestrial Invertebrate	Terr. Snail	III	a	Grasslands,	1.1, 2.1, 2.3	Housing and Urban Areas / Annual and Perennial Non-Timber Crops / Livestock and Poultry Farming	Anything that is related to or integrated with urban or housing structures. Urban areas (cities), suburbs, villages, cottages, shopping areas, offices, schools, hospitals, and urban parks, among others. / Non-timber crops that are planted for food, fodder, fuel or other uses; farms, crop fields, vineyards, mixed agroforestry system, etc. For rotational crops, it is necessary to refer to the most intensive practice that is used. Considered the diversity of agricultural practices and related impacts, some specialty cultures will be pooled into a generic threat category. / Farming of various domestic (cow, pigs, chickens, sheep, goats, turkeys, ducks, etc.) or semi-domesticated animals (llamas, alpacas, etc.); livestock rearing in outdoor pens (farms) or extensive rearing in natural habitat (pastures, ranching). Productivity is measured in terms of animal units.	Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs. (1.1), Habitat protection is essential, specifically grasslands, so cooperation and education of localities and land owners should be high priority. Avoid conversion of grasslands to crop production. (2.1), Habitat protection is essential, specifically grasslands, so cooperation and education of localities and land owners should be high priority. Avoid conversion of grasslands to livestock production. (2.3)		
76	Paravitrea septadens	Brown supercoil	Terrestrial Invertebrate	Terr. Snail	I	a	Forests and Woodlands	2.2.1, 5.3.1, 1.1	Plantation of Pulpwood / Complete Removal of the Forest Cove / Housing and Urban Areas	Cultivation of hybrid poplars and other species that are used for pulp production. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). / Anything that is related to or integrated with urban or housing structures. Urban areas (cities), suburbs, villages, cottages, shopping areas, offices, schools, hospitals, and urban parks, among others.	Habitat protection is essential, so cooperation and education of land owners should be high priority. Limit conversion of forested lands to plantation production.(2.2.1), Habitat protection is essential, so cooperation and education of land owners should be high priority. Avoid clearcutting suitable and/or occupied habitats. (5.3.1), Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs. (1.1)		Human activitiy in Breaks Interstate Park needs to be limited where the snail is known to be present.
77	Triodopsis tennesseensis	Budded three-tooth	Terrestrial Invertebrate	Terr. Snail	IV	a	Forests and Woodlands	2.2.1, 5.3.1, 1.1	Plantation of Pulpwood / Complete Removal of the Forest Cove / Housing and Urban Areas	Cultivation of hybrid poplars and other species that are used for pulp production. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). / Anything that is related to or integrated with urban or housing structures. Urban areas (cities), suburbs, villages, cottages, shopping areas, offices, schools, hospitals, and urban parks, among others.	Habitat protection is essential, so cooperation and education of land owners should be high priority. Limit conversion of forested lands to plantation production.(2.2.1), Habitat protection is essential, so cooperation and education of land owners should be high priority. Avoid clearcutting suitable and/or occupied habitats. (5.3.1), Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs. (1.1)		

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1	**Scientific_Name**	**Common_Name**	**Grouping**	**Type**	**Tier**	**COR**	**Habitats**	**Threat_Code**	**Threat_Description**	**Threat_Long**	**Actions**	**Working_Lands**	**Notes**
78	Caecidotea burkensis	Burkes Garden cave isopod	Terrestrial Invertebrate	Isopoda	I	c	Caves and Karst	1.1.2, 7.2.7, 9.3.2	Low-Density Housing Areas / Withdrawal of Groundwater / Soil Erosion, Sedimentation	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Withdrawal of groundwater for human consumption, crop production or other purposes. E.g., pumping water from the water table. / Erosion and sedimentation that are due to agricultural or silvicultural activities, regardless of the presence of local drainage systems (threat 7.2.4 and 7.2.5).	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Groundwater quality and quantity are important to this species (7.2.7), Follow BMPs to limit erosion and sedimentation (9.3.2)		
79	Triodopsis anteridon	Carter threetooth	Terrestrial Invertebrate	Terr. Snail	III	a	Forests and Woodlands	5.3.1, 1.1, 2.2.1	Complete Removal of the Forest Cove / Housing and Urban Areas / Plantation of Pulpwood	Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). / Anything that is related to or integrated with urban or housing structures. Urban areas (cities), suburbs, villages, cottages, shopping areas, offices, schools, hospitals, and urban parks, among others. / Cultivation of hybrid poplars and other species that are used for pulp production.	Habitat protection is essential, so cooperation and education of land owners should be high priority. Avoid clearcutting suitable and/or occupied habitats. (5.3.1), Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs. (1.1), Habitat protection is essential, so cooperation and education of land owners should be high priority. Limit conversion of forested lands to plantation production.(2.2.1)		
80	Nesticus carteri	Carter's cave spider	Terrestrial Invertebrate	Araneae	IV	c	Caves and Karst	1.1.2, 11.3.3,	Low-Density Housing Areas / Gradual Temperature Change /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / e.g., altered sex-ratio in species relying upon a temperature dependent sex determination, reduction of dissolved oxygen that is available to fish species, earlier ice-free dates, thawing of permafrost affecting bird breeding sites. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2) This is a cave / karst species which is threatened by increasing worldwide temperatures caused by climate change (Mammola et al. 2018). (11.3.3)		
81	Brachoria cedra	Cedar millipede	Terrestrial Invertebrate	Polydesmida	II	c	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Complete removal of forest habitat for logging would render the habitat non-viable for this species.(5.3.1)		
82	Conotyla celeno	Celeno millipede	Terrestrial Invertebrate	Chordeumatida	II	c	Forests and Woodlands	1.1.2, 11.3.3,	Low-Density Housing Areas / Gradual Temperature Change /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / e.g., altered sex-ratio in species relying upon a temperature dependent sex determination, reduction of dissolved oxygen that is available to fish species, earlier ice-free dates, thawing of permafrost affecting bird breeding sites. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), A cold weather-active species that may be susceptible to rising temperatures from climate change. (11.3.3)		
83	Pseudotremia cerberus	Cerberus cave millipede	Terrestrial Invertebrate	Chordeumatida	II	c	Caves and Karst	1.1.2, 11.3.3,	Low-Density Housing Areas / Gradual Temperature Change /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / e.g., altered sex-ratio in species relying upon a temperature dependent sex determination, reduction of dissolved oxygen that is available to fish species, earlier ice-free dates, thawing of permafrost affecting bird breeding sites. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), This is a cave / karst species which is threatened by increasing worldwide temperatures caused by climate change (Mammola et al. 2018). (11.3.3)		
84	Hendersonia occulta	Cherrystone drop	Terrestrial Invertebrate	Terr. Snail	IV	a	Forests and Woodlands, Cliffs and Talus, Riparian and Floodplains	5.3.1, 1.1,	Complete Removal of the Forest Cove / Housing and Urban Areas /	Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). / Anything that is related to or integrated with urban or housing structures. Urban areas (cities), suburbs, villages, cottages, shopping areas, offices, schools, hospitals, and urban parks, among others. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. Avoid clearcutting suitable and/or occupied habitats. (5.3.1), Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs. (1.1)		

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1	**Scientific_Name**	**Common_Name**	**Grouping**	**Type**	**Tier**	**COR**	**Habitats**	**Threat_Code**	**Threat_Description**	**Threat_Long**	**Actions**	**Working_Lands**	**Notes**
85	Oxyloma subeffusum	Chesapeake ambersnail	Terrestrial Invertebrate	Terr. Snail	III	a	Riparian and Floodplains, Non-Tidal Wetlands,	5.3.1, 1.1,	Complete Removal of the Forest Cove / Housing and Urban Areas /	Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). / Anything that is related to or integrated with urban or housing structures. Urban areas (cities), suburbs, villages, cottages, shopping areas, offices, schools, hospitals, and urban parks, among others. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. Avoid clearcutting suitable and/or occupied habitats. (5.3.1), Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs. (1.1)		
86	Brachoria mendota	Collinwood millipede	Terrestrial Invertebrate	Polydesmida	III	c	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Complete removal of forest habitat for logging would render the habitat non-viable for this species.(5.3.1)		
87	Paravitrea dentilla	Comb supercoil	Terrestrial Invertebrate	Terr. Snail	I	a	Forests and Woodlands, Riparian and Floodplains,	2.2.1, 5.3.1, 1.1	Plantation of Pulpwood / Complete Removal of the Forest Cove / Housing and Urban Areas	Cultivation of hybrid poplars and other species that are used for pulp production. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). / Anything that is related to or integrated with urban or housing structures. Urban areas (cities), suburbs, villages, cottages, shopping areas, offices, schools, hospitals, and urban parks, among others.	Habitat protection is essential, so cooperation and education of land owners should be high priority. Limit conversion of forested lands to plantation production.(2.2.1), Habitat protection is essential, so cooperation and education of land owners should be high priority. Avoid clearcutting suitable and/or occupied habitats. (5.3.1), Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs. (1.1)		
88	Sphodros coylei	Coyle's purse-web spider	Terrestrial Invertebrate	Araneae	IV	c	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Slow-growing mygalomorph purse web spider that may live for multiple years with a patchy distribution. Requires undisturbed habitat for survival, hunting, and breeding. Threatened by habitat loss - largely of mature forests. (5.3.1)		
89	Helicodiscus hadenoecus	Cricket coil	Terrestrial Invertebrate	Terr. Snail	III	a	Forests and Woodlands, Cliffs and Talus, Caves and Karst, Riparian and Floodplains	6.1.7, 5.3.1, 1.1	Caving / Complete Removal of the Forest Cove / Housing and Urban Areas	/ Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). / Anything that is related to or integrated with urban or housing structures. Urban areas (cities), suburbs, villages, cottages, shopping areas, offices, schools, hospitals, and urban parks, among others.	Known to inhabit caves; heavy human visitation is a potential threat to this species so limit access to known cave sites. (6.1.7), Habitat protection is essential, so cooperation and education of land owners should be high priority. Avoid clearcutting suitable and/or occupied habitats. (5.3.1), Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs. (1.1)		
90	Pseudotremia culveri	Culver's cave millipede	Terrestrial Invertebrate	Chordeumatida	II	c	Caves and Karst	1.1.2, 11.3.3,	Low-Density Housing Areas / Gradual Temperature Change /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / e.g., altered sex-ratio in species relying upon a temperature dependent sex determination, reduction of dissolved oxygen that is available to fish species, earlier ice-free dates, thawing of permafrost affecting bird breeding sites. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), This is a cave / karst species which is threatened by increasing worldwide temperatures caused by climate change (Mammola et al. 2018). (11.3.3)		
91	Caecidotea cumberlandensis	Cumberland Gap cave isopod	Terrestrial Invertebrate	Isopoda	I	c	Caves and Karst	1.1.2, 7.2.7, 9.3.2	Low-Density Housing Areas / Withdrawal of Groundwater / Soil Erosion, Sedimentation	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Withdrawal of groundwater for human consumption, crop production or other purposes. E.g., pumping water from the water table. / Erosion and sedimentation that are due to agricultural or silvicultural activities, regardless of the presence of local drainage systems (threat 7.2.4 and 7.2.5).	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Groundwater quality and quantity are important to this species (7.2.7), Follow BMPs to limit erosion and sedimentation (9.3.2)		

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1	Scientific_Name	Common_Name	Grouping	Type	Tier	COR	Habitats	Threat_Code	Threat_Description	Threat_Long	Actions	Working_Lands	Notes
92	Deadalochila plicata	Cumberland liptooth	Terrestrial Invertebrate	Terr. Snail	IV	a	Forests and Woodlands, Glades and Barrens,	5.3.1, 1.1,	Complete Removal of the Forest Cove / Housing and Urban Areas /	Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). / Anything that is related to or integrated with urban or housing structures. Urban areas (cities), suburbs, villages, cottages, shopping areas, offices, schools, hospitals, and urban parks, among others. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. Avoid clearcutting suitable and/or occupied habitats. (5.3.1), Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs. (1.1)		
93	Vertigo clappi	Cupped vertigo snail	Terrestrial Invertebrate	Terr. Snail	I	a	Forests and Woodlands, Cliffs and Talus	5.3.1, 1.1,	Complete Removal of the Forest Cove / Housing and Urban Areas /	Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). / Anything that is related to or integrated with urban or housing structures. Urban areas (cities), suburbs, villages, cottages, shopping areas, offices, schools, hospitals, and urban parks, among others. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. Avoid clearcutting suitable and/or occupied habitats. (5.3.1), Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs. (1.1)		
94	Nannaria hardeni	Curt Harden's Twisted-Claw Millipede	Terrestrial Invertebrate	Polydesmida	III	c	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Complete removal of forest habitat for logging would render the habitat non-viable for this species.(5.3.1)		
95	Glyphyalinia virginica	Depressed glyph	Terrestrial Invertebrate	Terr. Snail	III	a	Forests and Woodlands	5.3.1, 1.1,	Complete Removal of the Forest Cove / Housing and Urban Areas /	Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). / Anything that is related to or integrated with urban or housing structures. Urban areas (cities), suburbs, villages, cottages, shopping areas, offices, schools, hospitals, and urban parks, among others. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. Avoid clearcutting suitable and/or occupied habitats. (5.3.1), Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs. (1.1)		
96	Pseudotremia inexpectata	Devault's cave millipede	Terrestrial Invertebrate	Chordeumatida	II	c	Caves and Karst	1.1.2, 11.3.3,	Low-Density Housing Areas / Gradual Temperature Change /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / e.g., altered sex-ratio in species relying upon a temperature dependent sex determination, reduction of dissolved oxygen that is available to fish species, earlier ice-free dates, thawing of permafrost affecting bird breeding sites. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), This is a cave / karst species which is threatened by increasing worldwide temperatures caused by climate change (Mammola et al. 2018). (11.3.3)		
97	Pseudotremia cavernarum	Ellett Valley pseudotremia millipede	Terrestrial Invertebrate	Chordeumatida	I	c	Caves and Karst	1.1.2, 11.3.3,	Low-Density Housing Areas / Gradual Temperature Change /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / e.g., altered sex-ratio in species relying upon a temperature dependent sex determination, reduction of dissolved oxygen that is available to fish species, earlier ice-free dates, thawing of permafrost affecting bird breeding sites. /	Residential areas of continue to expand toward the range of this species. Development pressure is a major concern. Habitat protection is essential, so cooperation and education of land owners should be high priority. Conservation easements or natural preserve purchase may also need to be pursued to protect this very localized species. (1.1.2), This is a cave / karst species which is threatened by increasing worldwide temperatures caused by climate change (Mammola et al. 2018). (11.3.3)		
98	Cleidogona fidelitor	Faithful millipede	Terrestrial Invertebrate	Chordeumatida	III	c	Caves and Karst	1.1.2, 11.3.3,	Low-Density Housing Areas / Gradual Temperature Change /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / e.g., altered sex-ratio in species relying upon a temperature dependent sex determination, reduction of dissolved oxygen that is available to fish species, earlier ice-free dates, thawing of permafrost affecting bird breeding sites. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), A cold weather-active species that may be susceptible to rising temperatures from climate change. (11.3.3)		
99	Pseudotremia fergusoni	Ferguson's cave milliped	Terrestrial Invertebrate	Chordeumatida	II	c	Caves and Karst	1.1.2, 11.3.3,	Low-Density Housing Areas / Gradual Temperature Change /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / e.g., altered sex-ratio in species relying upon a temperature dependent sex determination, reduction of dissolved oxygen that is available to fish species, earlier ice-free dates, thawing of permafrost affecting bird breeding sites. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), This is a cave / karst species which is threatened by increasing worldwide temperatures caused by climate change (Mammola et al. 2018). (11.3.3)		

	A	B	C	D	E	F	G	H	L	P	T	U	V
1	**Scientific_Name**	**Common_Name**	**Grouping**	**Type**	**Tier**	**COR**	**Habitats**	**Threat_Code**	**Threat_Description**	**Threat_Long**	**Actions**	**Working_Lands**	**Notes**
100	Pseudotremia piscator	Fisher cave millipede	Terrestrial Invertebrate	Chordeumatida	II	c	Caves and Karst	1.1.2, 11.3.3,	Low-Density Housing Areas / Gradual Temperature Change /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / e.g., altered sex-ratio in species relying upon a temperature dependent sex determination, reduction of dissolved oxygen that is available to fish species, earlier ice-free dates, thawing of permafrost affecting bird breeding sites. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), This is a cave / karst species which is threatened by increasing worldwide temperatures caused by climate change (Mammola et al. 2018). (11.3.3)		
101	Mesomphix subplanus	Flat button	Terrestrial Invertebrate	Terr. Snail	III	a	Forests and Woodlands, Boreal Forests	2.2.1, 5.3.1, 1.1	Plantation of Pulpwood / Complete Removal of the Forest Cove / Housing and Urban Areas	Cultivation of hybrid poplars and other species that are used for pulp production. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). / Anything that is related to or integrated with urban or housing structures. Urban areas (cities), suburbs, villages, cottages, shopping areas, offices, schools, hospitals, and urban parks, among others.	Habitat protection is essential, so cooperation and education of land owners should be high priority. Limit conversion of forested lands to plantation production.(2.2.1), Habitat protection is essential, so cooperation and education of land owners should be high priority. Avoid clearcutting suitable and/or occupied habitats. (5.3.1), Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs. (1.1)		
102	Paravitrea mira	Funnel supercoil	Terrestrial Invertebrate	Terr. Snail	II	a	Forests and Woodlands, Riparian and Floodplains	2.2.1, 5.3.1, 1.1	Plantation of Pulpwood / Complete Removal of the Forest Cove / Housing and Urban Areas	Cultivation of hybrid poplars and other species that are used for pulp production. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). / Anything that is related to or integrated with urban or housing structures. Urban areas (cities), suburbs, villages, cottages, shopping areas, offices, schools, hospitals, and urban parks, among others.	Habitat protection is essential, so cooperation and education of land owners should be high priority. Limit conversion of forested lands to plantation production.(2.2.1), Habitat protection is essential, so cooperation and education of land owners should be high priority. Avoid clearcutting suitable and/or occupied habitats. (5.3.1), Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs. (1.1)		
103	Hypochilus gertschi	Gertsch's lampshade-web spider	Terrestrial Invertebrate	Araneae	II	c	Forests and Woodlands, Cliff and Talus	1.1.2	Low-Density Housing Areas / /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / /	A deep forest and possibly subterranean specialist, this species is likely threatened by habitat loss with a reduction in mature forests. (1.1.2)		
104	Kleptochthonius gertschi	Gertsch's cave pseudoscorpion	Terrestrial Invertebrate	Pseudoscorpiones	I	b	Caves and Karst	1.1.2	Low-Density Housing Areas / /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2)		
105	Fumonelix christyi	Glossy covert	Terrestrial Invertebrate	Terr. Snail	III	a	Forests and Woodlands	2.2.1, 5.3.1, 1.1	Plantation of Pulpwood / Complete Removal of the Forest Cove / Housing and Urban Areas	Cultivation of hybrid poplars and other species that are used for pulp production. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). / Anything that is related to or integrated with urban or housing structures. Urban areas (cities), suburbs, villages, cottages, shopping areas, offices, schools, hospitals, and urban parks, among others.	Habitat protection is essential, so cooperation and education of land owners should be high priority. Limit conversion of forested lands to plantation production.(2.2.1), Habitat protection is essential, so cooperation and education of land owners should be high priority. Avoid clearcutting suitable and/or occupied habitats. (5.3.1), Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs. (1.1)		

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1	**Scientific_Name**	**Common_Name**	**Grouping**	**Type**	**Tier**	**COR**	**Habitats**	**Threat_Code**	**Threat_Description**	**Threat_Long**	**Actions**	**Working_Lands**	**Notes**
106	Paravitrea placentula	Glossy supercoil	Terrestrial Invertebrate	Terr. Snail	III	a	Forests and Woodlands	2.2.1, 5.3.1, 1.1	Plantation of Pulpwood / Complete Removal of the Forest Cove / Housing and Urban Areas	Cultivation of hybrid poplars and other species that are used for pulp production. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). / Anything that is related to or integrated with urban or housing structures. Urban areas (cities), suburbs, villages, cottages, shopping areas, offices, schools, hospitals, and urban parks, among others.	Habitat protection is essential, so cooperation and education of land owners should be high priority. Limit conversion of forested lands to plantation production.(2.2.1), Habitat protection is essential, so cooperation and education of land owners should be high priority. Avoid clearcutting suitable and/or occupied habitats. (5.3.1), Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs. (1.1)		
107	Ventridens arcellus	Golden dome	Terrestrial Invertebrate	Terr. Snail	IV	a	Forests and Woodlands, Boreal Forests	5.3.1, 11.3.3, 1.1	Complete Removal of the Forest Cove / Gradual Temperature Change / Housing and Urban Areas	Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). / e.g., altered sex-ratio in species relying upon a temperature dependent sex determination, reduction of dissolved oxygen that is available to fish species, earlier ice-free dates, thawing of permafrost affecting bird breeding sites. / Anything that is related to or integrated with urban or housing structures. Urban areas (cities), suburbs, villages, cottages, shopping areas, offices, schools, hospitals, and urban parks, among others.	Habitat protection is essential, so cooperation and education of land owners should be high priority. Avoid clearcutting suitable and/or occupied habitats.(5.3.1), May be susceptible to rising temperatures from climate change. Implement large-scale management and conservation actions to minimize and reverse climate change. (11.3.3), Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs. (1.1)		
108	Zygonopus weyeriensis	Grand caverns blind cave millipede	Terrestrial Invertebrate	Chordeumatida	III	c	Caves and Karst	1.1.2, 6.1.7, 11.3.3	Low-Density Housing Areas / Caving / Gradual Temperature Change	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / / e.g., altered sex-ratio in species relying upon a temperature dependent sex determination, reduction of dissolved oxygen that is available to fish species, earlier ice-free dates, thawing of permafrost affecting bird breeding sites.	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), This is a cave / karst species which is threatened by increasing worldwide temperatures caused by climate change (Mammola et al. 2018). (11.3.3)		
109	Pseudotremia jaculohamatum	Harpoon cave millipede	Terrestrial Invertebrate	Chordeumatida	II	c	Caves and Karst	1.1.2, 11.3.3,	Low-Density Housing Areas / Gradual Temperature Change /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / e.g., altered sex-ratio in species relying upon a temperature dependent sex determination, reduction of dissolved oxygen that is available to fish species, earlier ice-free dates, thawing of permafrost affecting bird breeding sites. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), This is a cave / karst species which is threatened by increasing worldwide temperatures caused by climate change (Mammola et al. 2018). (11.3.3)		
110	Caecidotea henroti	Henrot's cave isopod	Terrestrial Invertebrate	Isopoda	II	c	Caves and Karst	1.1.2, 7.2.7, 9.3.2	Low-Density Housing Areas / Withdrawal of Groundwater / Soil Erosion, Sedimentation	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Withdrawal of groundwater for human consumption, crop production or other purposes. E.g., pumping water from the water table. / Erosion and sedimentation that are due to agricultural or silvicultural activities, regardless of the presence of local drainage systems (threat 7.2.4 and 7.2.5).	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Groundwater quality and quantity are important to this species (7.2.7), Follow BMPs to limit erosion and sedimentation (9.3.2)		
111	Stenotrema altispira	Highland slitmouth	Terrestrial Invertebrate	Terr. Snail	I	a	Forests and Woodlands, Boreal Forests	5.3.1, 11.3.3, 1.1	Complete Removal of the Forest Cove / Gradual Temperature Change / Housing and Urban Areas	Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). / e.g., altered sex-ratio in species relying upon a temperature dependent sex determination, reduction of dissolved oxygen that is available to fish species, earlier ice-free dates, thawing of permafrost affecting bird breeding sites. / Anything that is related to or integrated with urban or housing structures. Urban areas (cities), suburbs, villages, cottages, shopping areas, offices, schools, hospitals, and urban parks, among others.	Habitat protection is essential, so cooperation and education of land owners should be high priority. Avoid clearcutting suitable and/or occupied habitats.(5.3.1), May be susceptible to rising temperatures from climate change. Implement large-scale management and conservation actions to minimize and reverse climate change. (11.3.3), Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs. (1.1)		

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1	**Scientific_Name**	**Common_Name**	**Grouping**	**Type**	**Tier**	**COR**	**Habitats**	**Threat_Code**	**Threat_Description**	**Threat_Long**	**Actions**	**Working_Lands**	**Notes**
112	Cleidogona hoffmani	Hoffman's cleidogonid millipede	Terrestrial Invertebrate	Chordeumatida	IV	c	Forests and Woodlands	1.1.2, 11.3.3,	Low-Density Housing Areas / Gradual Temperature Change /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / e.g., altered sex-ratio in species relying upon a temperature dependent sex determination, reduction of dissolved oxygen that is available to fish species, earlier ice-free dates, thawing of permafrost affecting bird breeding sites. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), A cold weather-active species that may be susceptible to rising temperatures from climate change. (11.3.3)		
113	Brachoria hoffmani	Hoffman's xystodesmid millipede	Terrestrial Invertebrate	Polydesmida	II	c	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Complete removal of forest habitat for logging would render the habitat non-viable for this species.(5.3.1)		
114	Ventridens lasmodon	Hollow dome	Terrestrial Invertebrate	Terr. Snail	IV	a	Forests and Woodlands	2.2.1, 5.3.1, 1.1	Plantation of Pulpwood / Complete Removal of the Forest Cove / Housing and Urban Areas	Cultivation of hybrid poplars and other species that are used for pulp production. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). / Anything that is related to or integrated with urban or housing structures. Urban areas (cities), suburbs, villages, cottages, shopping areas, offices, schools, hospitals, and urban parks, among others.	Habitat protection is essential, so cooperation and education of land owners should be high priority. Limit conversion of forested lands to plantation production.(2.2.1), Habitat protection is essential, so cooperation and education of land owners should be high priority. Avoid clearcutting suitable and/or occupied habitats. (5.3.1), Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs. (1.1)		
115	Pseudotremia johnholsingeri	Holsinger's cave millipede	Terrestrial Invertebrate	Chordeumatida	II	c	Caves and Karst	1.1.2, 11.3.3,	Low-Density Housing Areas / Gradual Temperature Change /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / e.g., altered sex-ratio in species relying upon a temperature dependent sex determination, reduction of dissolved oxygen that is available to fish species, earlier ice-free dates, thawing of permafrost affecting bird breeding sites. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), This is a cave / karst species which is threatened by increasing worldwide temperatures caused by climate change (Mammola et al. 2018). (11.3.3)		
116	Nesticus holsingeri	Holsinger's cave spider	Terrestrial Invertebrate	Araneae	II	c	Caves and Karst	1.1.2, 11.3.3,	Low-Density Housing Areas / Gradual Temperature Change /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / e.g., altered sex-ratio in species relying upon a temperature dependent sex determination, reduction of dissolved oxygen that is available to fish species, earlier ice-free dates, thawing of permafrost affecting bird breeding sites. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2) This is a cave / karst species which is threatened by increasing worldwide temperatures caused by climate change (Mammola et al. 2018). (11.3.3)		
117	Pseudotremia hubbardi	Hubbard's cave millipede	Terrestrial Invertebrate	Chordeumatida	II	c	Caves and Karst	1.1.2, 11.3.3,	Low-Density Housing Areas / Gradual Temperature Change /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / e.g., altered sex-ratio in species relying upon a temperature dependent sex determination, reduction of dissolved oxygen that is available to fish species, earlier ice-free dates, thawing of permafrost affecting bird breeding sites. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), This is a cave / karst species which is threatened by increasing worldwide temperatures caused by climate change (Mammola et al. 2018). (11.3.3)		
118	Appalachioria ethotela	Hungry mother millipede	Terrestrial Invertebrate	Polydesmida	III	c	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Complete removal of forest habitat for logging would render the habitat non-viable for this species.(5.3.1)		

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1	**Scientific_Name**	**Common_Name**	**Grouping**	**Type**	**Tier**	**COR**	**Habitats**	**Threat_Code**	**Threat_Description**	**Threat_Long**	**Actions**	**Working_Lands**	**Notes**
119	Caecidotea incurva	Incurved cave isopod	Terrestrial Invertebrate	Isopoda	III	c	Caves and Karst	1.1.2, 7.2.7, 9.3.2	Low-Density Housing Areas / Withdrawal of Groundwater / Soil Erosion, Sedimentation	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Withdrawal of groundwater for human consumption, crop production or other purposes. E.g., pumping water from the water table. / Erosion and sedimentation that are due to agricultural or silvicultural activities, regardless of the presence of local drainage systems (threat 7.2.4 and 7.2.5).	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Groundwater quality and quantity are important to this species (7.2.7), Follow BMPs to limit erosion and sedimentation (9.3.2)		
120	Pseudotremia salifodina	Jones' saltpetre cave millipede	Terrestrial Invertebrate	Chordeumatida	II	c	Caves and Karst	1.1.2, 11.3.3,	Low-Density Housing Areas / Gradual Temperature Change /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / e.g., altered sex-ratio in species relying upon a temperature dependent sex determination, reduction of dissolved oxygen that is available to fish species, earlier ice-free dates, thawing of permafrost affecting bird breeding sites. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), This is a cave / karst species which is threatened by increasing worldwide temperatures caused by climate change (Mammola et al. 2018). (11.3.3)		
121	Brachoria laminata	Keeton's millipede	Terrestrial Invertebrate	Polydesmida	II	c	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Complete removal of forest habitat for logging would render the habitat non-viable for this species.(5.3.1)		
122	Paravitrea lamellidens	Lamellate supercoil	Terrestrial Invertebrate	Terr. Snail	II	a	Forests and Woodlands, Boreal Forests	2.2.1, 5.3.1, 1.1	Plantation of Pulpwood / Complete Removal of the Forest Cove / Housing and Urban Areas	Cultivation of hybrid poplars and other species that are used for pulp production. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). / Anything that is related to or integrated with urban or housing structures. Urban areas (cities), suburbs, villages, cottages, shopping areas, offices, schools, hospitals, and urban parks, among others.	Habitat protection is essential, so cooperation and education of land owners should be high priority. Limit conversion of forested lands to plantation production.(2.2.1), Habitat protection is essential, so cooperation and education of land owners should be high priority. Avoid clearcutting suitable and/or occupied habitats. (5.3.1), Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs. (1.1)		
123	Apheloria whiteheadi	Laurel creek xystodesmid millipede	Terrestrial Invertebrate	Polydesmida	I	c	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Complete removal of forest habitat for logging would render the habitat non-viable for this species.(5.3.1)		
124	Lirceus usdagalun	Lee County cave isopod	Terrestrial Invertebrate	Isopoda	II	a	Caves and Karst	1.1.2, 7.2.7, 9.3.2	Low-Density Housing Areas / Withdrawal of Groundwater / Soil Erosion, Sedimentation	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Withdrawal of groundwater for human consumption, crop production or other purposes. E.g., pumping water from the water table. / Erosion and sedimentation that are due to agricultural or silvicultural activities, regardless of the presence of local drainage systems (threat 7.2.4 and 7.2.5).	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Groundwater quality and quantity are important to this species (7.2.7), Follow BMPs to limit erosion and sedimentation (9.3.2)		
125	Pseudotremia loomisi	Loomis's rough-backed millipede	Terrestrial Invertebrate	Chordeumatida	II	c	Caves and Karst	1.1.2, 11.3.3,	Low-Density Housing Areas / Gradual Temperature Change /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / e.g., altered sex-ratio in species relying upon a temperature dependent sex determination, reduction of dissolved oxygen that is available to fish species, earlier ice-free dates, thawing of permafrost affecting bird breeding sites. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), This is a cave / karst species which is threatened by increasing worldwide temperatures caused by climate change (Mammola et al. 2018). (11.3.3)		

	A	B	C	D	E	F	G	H	L	P	T	U	V
1	**Scientific_Name**	**Common_Name**	**Grouping**	**Type**	**Tier**	**COR**	**Habitats**	**Threat_Code**	**Threat_Description**	**Threat_Long**	**Actions**	**Working_Lands**	**Notes**
126	Zygonopus whitei	Luray caverns blind cave millipede	Terrestrial Invertebrate	Chordeumatida	II	c	Caves and Karst	1.1.2, 6.1.7, 11.3.3	Low-Density Housing Areas / Caving / Gradual Temperature Change	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / / e.g., altered sex-ratio in species relying upon a temperature dependent sex determination, reduction of dissolved oxygen that is available to fish species, earlier ice-free dates, thawing of permafrost affecting bird breeding sites.	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), This is a cave / karst species which is threatened by increasing worldwide temperatures caused by climate change (Mammola et al. 2018). (11.3.3)		
127	Kleptochthonius lutzi	Lutz's cave pseudoscorpion	Terrestrial Invertebrate	Pseudoscorpiones	I	b	Caves and Karst	1.1.2	Low-Density Housing Areas / /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2)		
128	Antrolana lira	Madison Cave isopod	Terrestrial Invertebrate	Isopoda	III	b	Caves and Karst	1.1.2, 7.2.7, 9.3.2	Low-Density Housing Areas / Withdrawal of Groundwater / Soil Erosion, Sedimentation	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Withdrawal of groundwater for human consumption, crop production or other purposes. E.g., pumping water from the water table. / Erosion and sedimentation that are due to agricultural or silvicultural activities, regardless of the presence of local drainage systems (threat 7.2.4 and 7.2.5).	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Groundwater quality and quantity are important to this species (7.2.7), Follow BMPs to limit erosion and sedimentation (9.3.2)		
129	Glyphyalinia raderi	Maryland glyph	Terrestrial Invertebrate	Terr. Snail	II	a	Forests and Woodlands	5.3.1, 1.1,	Complete Removal of the Forest Cove / Housing and Urban Areas /	Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). / Anything that is related to or integrated with urban or housing structures. Urban areas (cities), suburbs, villages, cottages, shopping areas, offices, schools, hospitals, and urban parks, among others. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. Avoid clearcutting suitable and/or occupied habitats. (5.3.1), Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs. (1.1)		
130	Caecidotea mausi	Maus' cave isopod	Terrestrial Invertebrate	Isopoda	II	c	Caves and Karst	1.1.2, 7.2.7, 9.3.2	Low-Density Housing Areas / Withdrawal of Groundwater / Soil Erosion, Sedimentation	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Withdrawal of groundwater for human consumption, crop production or other purposes. E.g., pumping water from the water table. / Erosion and sedimentation that are due to agricultural or silvicultural activities, regardless of the presence of local drainage systems (threat 7.2.4 and 7.2.5).	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Groundwater quality and quantity are important to this species (7.2.7), Follow BMPs to limit erosion and sedimentation (9.3.2)		
131	Nannaria ericacea	McGraw Gap xystodesmid millipede	Terrestrial Invertebrate	Polydesmida	IV	c	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Complete removal of forest habitat for logging would render the habitat non-viable for this species.(5.3.1)		
132	Conotyla melinda	Melinda millipede	Terrestrial Invertebrate	Chordeumatida	II	c	Forests and Woodlands	1.1.2, 11.3.3,	Low-Density Housing Areas / Gradual Temperature Change /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / e.g., altered sex-ratio in species relying upon a temperature dependent sex determination, reduction of dissolved oxygen that is available to fish species, earlier ice-free dates, thawing of permafrost affecting bird breeding sites. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), A cold weather-active species that may be susceptible to rising temperatures from climate change. (11.3.3)		
133	Escaryus cryptorobius	Montane centipede	Terrestrial Invertebrate	Geophilomorpha	II	c	Forests and Woodlands	11.1.1, 5.3.1,	Changes in Vegetation Communities / Complete Removal of the Forest Cove /	Major changes in an ecosystem resulting in changes to vegetation communities distinguished from natural vegetation succession, which may threaten open-country species (Threat 7.3.2). E.g., migration of deciduous trees towards the boreal forest, rising sea levels, desertification, thawing permafrost (in tundra), coral bleaching. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	High elevation species susceptible to climate change (11.1.1), Complete removal of forest habitat for logging would render the habitat non-viable for this species.(5.3.1)		

	A	B	C	D	E	F	G	H	L	P	T	U	V
1	**Scientific_Name**	**Common_Name**	**Grouping**	**Type**	**Tier**	**COR**	**Habitats**	**Threat_Code**	**Threat_Description**	**Threat_Long**	**Actions**	**Working_Lands**	**Notes**
134	Anguispira jessica	Mountain disc	Terrestrial Invertebrate	Terr. Snail	I	a	Forests and Woodlands, Boreal Forests	2.2.1, 5.3.1, 1.1	Plantation of Pulpwood / Complete Removal of the Forest Cove / Housing and Urban Areas	Cultivation of hybrid poplars and other species that are used for pulp production. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). / Anything that is related to or integrated with urban or housing structures. Urban areas (cities), suburbs, villages, cottages, shopping areas, offices, schools, hospitals, and urban parks, among others.	Habitat protection is essential, so cooperation and education of land owners should be high priority. Limit conversion of forested lands to plantation production.(2.2.1), Habitat protection is essential, so cooperation and education of land owners should be high priority. Avoid clearcutting suitable and/or occupied habitats. (5.3.1), Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs. (1.1)		
135	Mediappendix vagans	Mudbank ambersnail	Terrestrial Invertebrate	Terr. Snail	III	a	Shorelines	1.1.1, 11.1.1,	Dense Housing and Urban Areas / Changes in Vegetation Communities /	Medium- to high-density development for residential use and buildings for related services. Allows very little to no maintenance of ecological functions. E.g., urban areas, suburbs, villages, schools, libraries, seniors' housing, hospitals / Major changes in an ecosystem resulting in changes to vegetation communities distinguished from natural vegetation succession, which may threaten open-country species (Threat 7.3.2). E.g., migration of deciduous trees towards the boreal forest, rising sea levels, desertification, thawing permafrost (in tundra), coral bleaching. /	Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs, specifically wetlands and shorleine habitats. (1.1.1), May be susceptible to rising sea level from climate change and impacts to shoreline habitat. Implement large-scale management and conservation actions to minimize and reverse climate change. (11.1.1)		
136	Caecidotea bowmani	Natural Bridge cave isopod	Terrestrial Invertebrate	Isopoda	II	c	Caves and Karst	1.1.2, 7.2.7, 9.3.2	Low-Density Housing Areas / Withdrawal of Groundwater / Soil Erosion, Sedimentation	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Withdrawal of groundwater for human consumption, crop production or other purposes. E.g., pumping water from the water table. / Erosion and sedimentation that are due to agricultural or silvicultural activities, regardless of the presence of local drainage systems (threat 7.2.4 and 7.2.5).	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Groundwater quality and quantity are important to this species (7.2.7), Follow BMPs to limit erosion and sedimentation (9.3.2)		
137	Paravitrea pontis	Natural Bridge supercoil	Terrestrial Invertebrate	Terr. Snail	III	a	Forests and Woodlands, Cliffs and Talus	5.3.1, 1.1,	Complete Removal of the Forest Cove / Housing and Urban Areas /	Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). / Anything that is related to or integrated with urban or housing structures. Urban areas (cities), suburbs, villages, cottages, shopping areas, offices, schools, hospitals, and urban parks, among others. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. Avoid clearcutting suitable and/or occupied habitats. (5.3.1), Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs. (1.1)		
138	Caecidotea nickajackensis	Nickajack Cave isopod	Terrestrial Invertebrate	Isopoda	I	c	Caves and Karst	1.1.2, 7.2.7, 9.3.2	Low-Density Housing Areas / Withdrawal of Groundwater / Soil Erosion, Sedimentation	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Withdrawal of groundwater for human consumption, crop production or other purposes. E.g., pumping water from the water table. / Erosion and sedimentation that are due to agricultural or silvicultural activities, regardless of the presence of local drainage systems (threat 7.2.4 and 7.2.5).	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Groundwater quality and quantity are important to this species (7.2.7), Follow BMPs to limit erosion and sedimentation (9.3.2)		
139	Pseudotremia orndorffi	Orndorff's cave millipede	Terrestrial Invertebrate	Chordeumatida	II	c	Caves and Karst	1.1.2, 11.3.3,	Low-Density Housing Areas / Gradual Temperature Change /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / e.g., altered sex-ratio in species relying upon a temperature dependent sex determination, reduction of dissolved oxygen that is available to fish species, earlier ice-free dates, thawing of permafrost affecting bird breeding sites. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), This is a cave / karst species which is threatened by increasing worldwide temperatures caused by climate change (Mammola et al. 2018). (11.3.3)		

	A	B	C	D	E	F	G	H	L	P	T	U	V
1	**Scientific_Name**	**Common_Name**	**Grouping**	**Type**	**Tier**	**COR**	**Habitats**	**Threat_Code**	**Threat_Description**	**Threat_Long**	**Actions**	**Working_Lands**	**Notes**
140	Caecidotea phreatica	Phreatic isopod	Terrestrial Invertebrate	Isopoda	II	c	Caves and Karst	1.1.2, 7.2.7, 9.3.2	Low-Density Housing Areas / Withdrawal of Groundwater / Soil Erosion, Sedimentation	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Withdrawal of groundwater for human consumption, crop production or other purposes. E.g., pumping water from the water table. / Erosion and sedimentation that are due to agricultural or silvicultural activities, regardless of the presence of local drainage systems (threat 7.2.4 and 7.2.5).	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Groundwater quality and quantity are important to this species (7.2.7), Follow BMPs to limit erosion and sedimentation (9.3.2)		
141	Triodopsis burchi	Pittsylvania three-tooth	Terrestrial Invertebrate	Terr. Snail	III	a	Forests and Woodlands	5.3.1, 1.1,	Complete Removal of the Forest Cove / Housing and Urban Areas /	Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). / Anything that is related to or integrated with urban or housing structures. Urban areas (cities), suburbs, villages, cottages, shopping areas, offices, schools, hospitals, and urban parks, among others. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. Avoid clearcutting suitable and/or occupied habitats. (5.3.1), Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs. (1.1)		
142	Hypochilus pococki	Pocock's lampshade-web spider	Terrestrial Invertebrate	Araneae	IV	c	Forests and Woodlands, Cliff and Talus	1.1.2, 6.1.3,	Low-Density Housing Areas / Recreational Use of Cliffs and Rock Faces /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / e.g., rock climbing, hang-gliding /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Typical habitat is rock outcrops , some of which could be impacted by rock climbing and similar activities (6.1.3)		
143	Amerigoniscus henroti	Powell Valley terrestrial isopod	Terrestrial Invertebrate	Isopoda	III	c	Caves and Karst	1.1.2	Low-Density Housing Areas / /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2)		
144	Mesodon elevatus	Proud globe snail	Terrestrial Invertebrate	Terr. Snail	IV	a	Forests and Woodlands, Caves and Karst, Riparian and Floodplains	2.2.1, 5.3.1, 1.1	Plantation of Pulpwood / Complete Removal of the Forest Cove / Housing and Urban Areas	Cultivation of hybrid poplars and other species that are used for pulp production. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). / Anything that is related to or integrated with urban or housing structures. Urban areas (cities), suburbs, villages, cottages, shopping areas, offices, schools, hospitals, and urban parks, among others.	Habitat protection is essential, so cooperation and education of land owners should be high priority. Limit conversion of forested lands to plantation production.(2.2.1), Habitat protection is essential, so cooperation and education of land owners should be high priority. Avoid clearcutting suitable and/or occupied habitats. (5.3.1), Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs. (1.1)		
145	Litocampa pucketti	Puckett's cave dipluran	Terrestrial Invertebrate	Entognatha	I	c	Caves and Karst	1.1.2	Low-Density Housing Areas / /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2)		
146	Pseudotremia peponocranium	Pumpkin-headed cave millipede	Terrestrial Invertebrate	Chordeumatida	II	c	Caves and Karst	1.1.2, 11.3.3,	Low-Density Housing Areas / Gradual Temperature Change /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / e.g., altered sex-ratio in species relying upon a temperature dependent sex determination, reduction of dissolved oxygen that is available to fish species, earlier ice-free dates, thawing of permafrost affecting bird breeding sites. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), This is a cave / karst species which is threatened by increasing worldwide temperatures caused by climate change (Mammola et al. 2018). (11.3.3)		

	A	B	C	D	E	F	G	H	L	P	T	U	V
1	**Scientific_Name**	**Common_Name**	**Grouping**	**Type**	**Tier**	**COR**	**Habitats**	**Threat_Code**	**Threat_Description**	**Threat_Long**	**Actions**	**Working_Lands**	**Notes**
147	Stenotrema pilula	Pygmy slitmouth	Terrestrial Invertebrate	Terr. Snail	III	a	Forests and Woodlands	2.2.1, 5.3.1, 1.1	Plantation of Pulpwood / Complete Removal of the Forest Cove / Housing and Urban Areas	Cultivation of hybrid poplars and other species that are used for pulp production. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). / Anything that is related to or integrated with urban or housing structures. Urban areas (cities), suburbs, villages, cottages, shopping areas, offices, schools, hospitals, and urban parks, among others.	Habitat protection is essential, so cooperation and education of land owners should be high priority. Limit conversion of forested lands to plantation production.(2.2.1), Habitat protection is essential, so cooperation and education of land owners should be high priority. Avoid clearcutting suitable and/or occupied habitats. (5.3.1), Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs. (1.1)		
148	Sphodros rufipes	Red-legged purse-web spider	Terrestrial Invertebrate	Araneae	IV	c	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Slow-growing mygalomorph purse web spider that may live for multiple years with a patchy distribution. Requires undisturbed habitat for survival, hunting, and breeding. Threatened by habitat loss - largely of mature forests. (5.3.1)		
149	Rhysodesmus restans	Relictual appalachian millipede	Terrestrial Invertebrate	Polydesmida	II	c	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Complete removal of forest habitat for logging would render the habitat non-viable for this species.(5.3.1)		
150	Striatura exigua	Ribbed striate	Terrestrial Invertebrate	Terr. Snail	IV	a	Forests and Woodlands, Boreal Forests, Non-Tidal Wetlands	5.3.1, 1.1,	Complete Removal of the Forest Cove / Housing and Urban Areas /	Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). / Anything that is related to or integrated with urban or housing structures. Urban areas (cities), suburbs, villages, cottages, shopping areas, offices, schools, hospitals, and urban parks, among others. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. Avoid clearcutting suitable and/or occupied habitats. (5.3.1), Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs. (1.1)		
151	Pseudotremia fremens	Roaring branch rough-backed millipede	Terrestrial Invertebrate	Chordeumatida	II	c	Caves and Karst	1.1.2, 11.3.3,	Low-Density Housing Areas / Gradual Temperature Change /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / e.g., altered sex-ratio in species relying upon a temperature dependent sex determination, reduction of dissolved oxygen that is available to fish species, earlier ice-free dates, thawing of permafrost affecting bird breeding sites. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), This is a cave / karst species which is threatened by increasing worldwide temperatures caused by climate change (Mammola et al. 2018). (11.3.3)		
152	Antrodiaetus robustus	Robust trapdoor spider	Terrestrial Invertebrate	Araneae	II	c	Forests and Woodlands	1.1.2	Low-Density Housing Areas / /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2)		
153	Paravitrea reesei	Round supercoil	Terrestrial Invertebrate	Terr. Snail	III	a	Forests and Woodlands, Riparian and Floodplains	5.3.1, 1.1,	Complete Removal of the Forest Cove / Housing and Urban Areas /	Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). / Anything that is related to or integrated with urban or housing structures. Urban areas (cities), suburbs, villages, cottages, shopping areas, offices, schools, hospitals, and urban parks, among others. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. Avoid clearcutting suitable and/or occupied habitats. (5.3.1), Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs. (1.1)		

	A	B	C	D	E	F	G	H	L	P	T	U	V
1	**Scientific_Name**	**Common_Name**	**Grouping**	**Type**	**Tier**	**COR**	**Habitats**	**Threat_Code**	**Threat_Description**	**Threat_Long**	**Actions**	**Working_Lands**	**Notes**
154	Helicodiscus lirellus	Rubble coil	Terrestrial Invertebrate	Terr. Snail	I	a	Forests and Woodlands, Cliffs and Talus	1.1.2, 4.1.1, 5.3.1	Low-Density Housing Areas / Roads / Complete Removal of the Forest Cove	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM).	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Coordinate with Virginia Dept of Transportation to protect the Rubble Coil type locality on Rt. 850 (West Midland Trail) on Kerrs Creek. This site is within or immediately adjacent to the road right-of-way and is subject to regular maintenance. Road reconstruction or widening, herbicide or pesticide use, could eliminate the type locality. (4.1.1), Coordinate with Department of Forestry, and other pertinent state regulatory agencies, to limit logging in areas where Rubble Coil is present. (5.3.1)		
155	Glyphyalinia picea	Rust glyph	Terrestrial Invertebrate	Terr. Snail	II	a	Forests and Woodlands, Boreal Forests	5.3.1, 11.3.3, 1.1	Complete Removal of the Forest Cove / Gradual Temperature Change / Housing and Urban Areas	Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). / e.g., altered sex-ratio in species relying upon a temperature dependent sex determination, reduction of dissolved oxygen that is available to fish species, earlier ice-free dates, thawing of permafrost affecting bird breeding sites. / Anything that is related to or integrated with urban or housing structures. Urban areas (cities), suburbs, villages, cottages, shopping areas, offices, schools, hospitals, and urban parks, among others.	Habitat protection is essential, so cooperation and education of land owners should be high priority. Avoid clearcutting suitable and/or occupied habitats.(5.3.1), May be susceptible to rising temperatures from climate change. Implement large-scale management and conservation actions to minimize and reverse climate change. (11.3.3), Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs. (1.1)		
156	Pseudotremia ryensis	Rye cove cave millipede	Terrestrial Invertebrate	Chordeumatida	II	c	Caves and Karst	1.1.2, 11.3.3,	Low-Density Housing Areas / Gradual Temperature Change /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / e.g., altered sex-ratio in species relying upon a temperature dependent sex determination, reduction of dissolved oxygen that is available to fish species, earlier ice-free dates, thawing of permafrost affecting bird breeding sites. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), This is a cave / karst species which is threatened by increasing worldwide temperatures caused by climate change (Mammola et al. 2018). (11.3.3)		
157	Lirceus culveri	Rye Cove isopod	Terrestrial Invertebrate	Isopoda	I	b	Caves and Karst	1.1.2, 7.2.7, 9.3.2	Low-Density Housing Areas / Withdrawal of Groundwater / Soil Erosion, Sedimentation	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Withdrawal of groundwater for human consumption, crop production or other purposes. E.g., pumping water from the water table. / Erosion and sedimentation that are due to agricultural or silvicultural activities, regardless of the presence of local drainage systems (threat 7.2.4 and 7.2.5).	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Groundwater quality and quantity are important to this species (7.2.7), Follow BMPs to limit erosion and sedimentation (9.3.2)		
158	Discus bryanti	Sawtooth disc	Terrestrial Invertebrate	Terr. Snail	III	a	Forests and Woodlands	5.3.1, 11.3.3, 1.1	Complete Removal of the Forest Cove / Gradual Temperature Change / Housing and Urban Areas	Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). / e.g., altered sex-ratio in species relying upon a temperature dependent sex determination, reduction of dissolved oxygen that is available to fish species, earlier ice-free dates, thawing of permafrost affecting bird breeding sites. / Anything that is related to or integrated with urban or housing structures. Urban areas (cities), suburbs, villages, cottages, shopping areas, offices, schools, hospitals, and urban parks, among others.	Habitat protection is essential, so cooperation and education of land owners should be high priority. Avoid clearcutting suitable and/or occupied habitats.(5.3.1), May be susceptible to rising temperatures from climate change. Implement large-scale management and conservation actions to minimize and reverse climate change. (11.3.3), Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs. (1.1)		

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1	**Scientific_Name**	**Common_Name**	**Grouping**	**Type**	**Tier**	**COR**	**Habitats**	**Threat_Code**	**Threat_Description**	**Threat_Long**	**Actions**	**Working_Lands**	**Notes**
159	Helicodiscus diadema	Shaggy coil	Terrestrial Invertebrate	Terr. Snail	I	a	Cliffs and Talus	1.1.2, 2.3.1, 9.3.3	Low-Density Housing Areas / Outdoor Extensive Livestock Operation (On Pasture) / Herbicides and Pesticides	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / / Includes the use of inputs for controlling crop pests. E.g., herbicides, insecticides, fungicides.	Protection of Shaggy Coil and the species' habitat will rely heavily upon the participation of a single landowner based on the current known distribution. Maintain communication and cooperation with the current landowner. Discuss scientific information and possible conservation with willing landowner. (1.1.2), Protection of Shaggy Coil and the species' habitat will rely heavily upon the participation of a single landowner based on the current known distribution. Maintain communication and cooperation with the current landowner. Discuss scientific information and possible conservation with willing landowner. (2.3.1) Minimize application of herbicides and pesticides on small area from which species is known. (9.3.3)		
160	Brachoria sheari	Shear's mimic millepede	Terrestrial Invertebrate	Polydesmida	II	b	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Complete removal of forest habitat for logging would render the habitat non-viable for this species.(5.3.1)		
161	Paravitrea blarina	Shrew supercoil	Terrestrial Invertebrate	Terr. Snail	I	a	Forests and Woodlands	2.2.1, 5.3.1, 1.1	Plantation of Pulpwood / Complete Removal of the Forest Cove / Housing and Urban Areas	Cultivation of hybrid poplars and other species that are used for pulp production. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). / Anything that is related to or integrated with urban or housing structures. Urban areas (cities), suburbs, villages, cottages, shopping areas, offices, schools, hospitals, and urban parks, among others.	Habitat protection is essential, so cooperation and education of land owners should be high priority. Limit conversion of forested lands to plantation production.(2.2.1), Habitat protection is essential, so cooperation and education of land owners should be high priority. Avoid clearcutting suitable and/or occupied habitats. (5.3.1), Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs. (1.1)		
162	Appalachioria sierwaldae	Sierwald's Appalachian Mimic Millipede	Terrestrial Invertebrate	Polydesmida	II	c	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Complete removal of forest habitat for logging would render the habitat non-viable for this species.(5.3.1)		
163	Paravitrea subtilis	Slender supercoil	Terrestrial Invertebrate	Terr. Snail	I	a	Forests and Woodlands	2.2.1, 5.3.1, 1.1	Plantation of Pulpwood / Complete Removal of the Forest Cove / Housing and Urban Areas	Cultivation of hybrid poplars and other species that are used for pulp production. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). / Anything that is related to or integrated with urban or housing structures. Urban areas (cities), suburbs, villages, cottages, shopping areas, offices, schools, hospitals, and urban parks, among others.	Habitat protection is essential, so cooperation and education of land owners should be high priority. Limit conversion of forested lands to plantation production.(2.2.1), Habitat protection is essential, so cooperation and education of land owners should be high priority. Avoid clearcutting suitable and/or occupied habitats. (5.3.1), Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs. (1.1)		
164	Vertigo parvula	Smallmouth vertigo	Terrestrial Invertebrate	Terr. Snail	III	a	Forests and Woodlands, Cliffs and Talus	5.3.1, 1.1,	Complete Removal of the Forest Cove / Housing and Urban Areas /	Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). / Anything that is related to or integrated with urban or housing structures. Urban areas (cities), suburbs, villages, cottages, shopping areas, offices, schools, hospitals, and urban parks, among others. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. Avoid clearcutting suitable and/or occupied habitats. (5.3.1), Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs. (1.1)		

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1	**Scientific_Name**	**Common_Name**	**Grouping**	**Type**	**Tier**	**COR**	**Habitats**	**Threat_Code**	**Threat_Description**	**Threat_Long**	**Actions**	**Working_Lands**	**Notes**
165	Nannaria laminata	Smith Creek xystodesmid millipede	Terrestrial Invertebrate	Polydesmida	IV	c	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Complete removal of forest habitat for logging would render the habitat non-viable for this species.(5.3.1)		
166	Patera laevior	Smooth bladetooth	Terrestrial Invertebrate	Terr. Snail	IV	a	Forests and Woodlands, Cliffs and Talus, Caves and Karst, Riparian and Floodplains, Urban Lands	2.2.1, 5.3.1, 1.1	Plantation of Pulpwood / Complete Removal of the Forest Cove / Housing and Urban Areas	Cultivation of hybrid poplars and other species that are used for pulp production. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). / Anything that is related to or integrated with urban or housing structures. Urban areas (cities), suburbs, villages, cottages, shopping areas, offices, schools, hospitals, and urban parks, among others.	Habitat protection is essential, so cooperation and education of land owners should be high priority. Limit conversion of forested lands to plantation production.(2.2.1), Habitat protection is essential, so cooperation and education of land owners should be high priority. Avoid clearcutting suitable and/or occupied habitats. (5.3.1), Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs. (1.1)	Life Stage - All; Substrate - rocky habitat and near logs	
167	Mediappendix hubrichti	Snowhill ambersnail	Terrestrial Invertebrate	Terr. Snail	III	a	Tidal Creeks and Rivers, Tidal Wetlands,	11.1.1, 11.2.2, 1.1	Changes in Vegetation Communities / Changes in salinity / Housing and Urban Areas	Major changes in an ecosystem resulting in changes to vegetation communities distinguished from natural vegetation succession, which may threaten open-country species (Threat 7.3.2). E.g., migration of deciduous trees towards the boreal forest, rising sea levels, desertification, thawing permafrost (in tundra), coral bleaching. / / Anything that is related to or integrated with urban or housing structures. Urban areas (cities), suburbs, villages, cottages, shopping areas, offices, schools, hospitals, and urban parks, among others.	May be susceptible to rising sea level from climate change and impacts to shoreline habitat. Implement large-scale management and conservation actions to minimize and reverse climate change. (11.1.1), May be susceptible to rising sea level from climate change, which could shift brackish habitats to saltwater. Implement large-scale management and conservation actions to minimize and reverse climate change. (11.2.2), Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs.(1.1)		
168	Pseudotremia princeps	South branch valley cave millipede	Terrestrial Invertebrate	Chordeumatida	II	c	Caves and Karst	1.1.2, 11.3.3,	Low-Density Housing Areas / Gradual Temperature Change /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / e.g., altered sex-ratio in species relying upon a temperature dependent sex determination, reduction of dissolved oxygen that is available to fish species, earlier ice-free dates, thawing of permafrost affecting bird breeding sites. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), This is a cave / karst species which is threatened by increasing worldwide temperatures caused by climate change (Mammola et al. 2018). (11.3.3)		
169	Vaejovis carolinianus	Southern Unstriped Scorpion Carolina scorpion	Terrestrial Invertebrate	Scorpiones	III	c	Forests and Woodlands, Urban Lands	1.1.2	Low-Density Housing Areas / /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2)		Can inhabit residences and are often found in crawl spaces and cellars where prey is available.
170	Paravitrea hera	Spirit supercoil	Terrestrial Invertebrate	Terr. Snail	I	a	Riparian and Floodplains	5.3.1, 1.1,	Complete Removal of the Forest Cove / Housing and Urban Areas /	Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). / Anything that is related to or integrated with urban or housing structures. Urban areas (cities), suburbs, villages, cottages, shopping areas, offices, schools, hospitals, and urban parks, among others. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. Avoid clearcutting suitable and/or occupied habitats. (5.3.1), Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs. (1.1)		

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1	**Scientific_Name**	**Common_Name**	**Grouping**	**Type**	**Tier**	**COR**	**Habitats**	**Threat_Code**	**Threat_Description**	**Threat_Long**	**Actions**	**Working_Lands**	**Notes**
171	Triodopsis picea	Spruce knob threetooth	Terrestrial Invertebrate	Terr. Snail	I	a	Forests and Woodlands, Boreal Forests	5.3.1, 11.3.3, 1.1	Complete Removal of the Forest Cove / Gradual Temperature Change / Housing and Urban Areas	Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). / e.g., altered sex-ratio in species relying upon a temperature dependent sex determination, reduction of dissolved oxygen that is available to fish species, earlier ice-free dates, thawing of permafrost affecting bird breeding sites. / Anything that is related to or integrated with urban or housing structures. Urban areas (cities), suburbs, villages, cottages, shopping areas, offices, schools, hospitals, and urban parks, among others.	Habitat protection is essential, so cooperation and education of land owners should be high priority. Avoid clearcutting suitable and/or occupied habitats.(5.3.1), May be susceptible to rising temperatures from climate change. Implement large-scale management and conservation actions to minimize and reverse climate change. (11.3.3), Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs. (1.1)		
172	Microhexura montivaga	Spruce-fir moss spider	Terrestrial Invertebrate	Araneae	I	c	Boreal Forest	11.1.1	Changes in Vegetation Communities / /	Major changes in an ecosystem resulting in changes to vegetation communities distinguished from natural vegetation succession, which may threaten open-country species (Threat 7.3.2). E.g., migration of deciduous trees towards the boreal forest, rising sea levels, desertification, thawing permafrost (in tundra), coral bleaching. / /	Boreal forest relict susceptible to climate change (11.1.1)		Small population size may be an issue for this species in Virginia
173	Nannaria stellaradix	Starroot's Twisted-Claw Millipede	Terrestrial Invertebrate	Polydesmida	II	c	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Complete removal of forest habitat for logging would render the habitat non-viable for this species.(5.3.1)		
174	Vertigo teskeyae	Swamp vertigo	Terrestrial Invertebrate	Terr. Snail	IV	a	Riparian and Floodplains, Shorelines, Lakes, Non-Tidal Wetlands	1.1, 5.3.1, 2.2.1	Housing and Urban Areas / Complete Removal of the Forest Cove / Plantation of Pulpwood	Anything that is related to or integrated with urban or housing structures. Urban areas (cities), suburbs, villages, cottages, shopping areas, offices, schools, hospitals, and urban parks, among others. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). / Cultivation of hybrid poplars and other species that are used for pulp production.	Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs, such as shoreline, lakes and riparian areas along rivers. (1.1), Habitat protection is essential, so cooperation and education of land owners should be high priority. Avoid clearcutting suitable and/or occupied habitats. (5.3.1), Habitat protection is essential, so cooperation and education of land owners should be high priority. Limit conversion of forested lands to plantation production. (2.2.1)		
175	Helicodiscus triodus	Talus coil	Terrestrial Invertebrate	Terr. Snail	I	a	Forests and Woodlands, Cliffs and Talus, Caves and Karst,	5.3.1, 6.1.7, 1.1	Complete Removal of the Forest Cove / Caving / Housing and Urban Areas	Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). / / Anything that is related to or integrated with urban or housing structures. Urban areas (cities), suburbs, villages, cottages, shopping areas, offices, schools, hospitals, and urban parks, among others.	Habitat protection is essential, so cooperation and education of land owners should be high priority. Avoid clearcutting suitable and/or occupied habitats. (5.3.1), Known to inhabit caves; heavy human visitation is a potential threat to this species so limit access to known cave sites. (6.1.7), Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs. (1.1)		
176	Helicodiscus shimeki	Temperate coil	Terrestrial Invertebrate	Terr. Snail	IV	a	Forests and Woodlands	5.3.1, 11.3.3, 1.1	Complete Removal of the Forest Cove / Gradual Temperature Change / Housing and Urban Areas	Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). / e.g., altered sex-ratio in species relying upon a temperature dependent sex determination, reduction of dissolved oxygen that is available to fish species, earlier ice-free dates, thawing of permafrost affecting bird breeding sites. / Anything that is related to or integrated with urban or housing structures. Urban areas (cities), suburbs, villages, cottages, shopping areas, offices, schools, hospitals, and urban parks, among others.	Habitat protection is essential, so cooperation and education of land owners should be high priority. Avoid clearcutting suitable and/or occupied habitats.(5.3.1), May be susceptible to rising temperatures from climate change. Implement large-scale management and conservation actions to minimize and reverse climate change. (11.3.3), Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs. (1.1)		

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1	**Scientific_Name**	**Common_Name**	**Grouping**	**Type**	**Tier**	**COR**	**Habitats**	**Threat_Code**	**Threat_Description**	**Threat_Long**	**Actions**	**Working_Lands**	**Notes**
177	Nesticus tennesseensis	Tennessee cave spider	Terrestrial Invertebrate	Araneae	II	c	Caves and Karst	1.1.2, 11.3.3,	Low-Density Housing Areas / Gradual Temperature Change /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / e.g., altered sex-ratio in species relying upon a temperature dependent sex determination, reduction of dissolved oxygen that is available to fish species, earlier ice-free dates, thawing of permafrost affecting bird breeding sites. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2) This is a cave / karst species which is threatened by increasing worldwide temperatures caused by climate change (Mammola et al. 2018). (11.3.3)		
178	Nannaria ambulatrix	The Big Walker Twisted-Claw Millipede	Terrestrial Invertebrate	Polydesmida	III	c	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Complete removal of forest habitat for logging would render the habitat non-viable for this species.(5.3.1)		
179	Nannaria fracta	The Breaks Interstate Park Twisted-Claw Millipede	Terrestrial Invertebrate	Polydesmida	III	c	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Complete removal of forest habitat for logging would render the habitat non-viable for this species.(5.3.1)		
180	Nannaria asta	The Crawfish Valley Twisted-Claw Millipede	Terrestrial Invertebrate	Polydesmida	II	b	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Complete removal of forest habitat for logging would render the habitat non-viable for this species.(5.3.1)		
181	Nannaria orycta	The Digging Twisted-Claw Millipede	Terrestrial Invertebrate	Polydesmida	III	c	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Complete removal of forest habitat for logging would render the habitat non-viable for this species.(5.3.1)		
182	Nannaria ignis	The Dragon-Headed Twisted-Claw Millipede	Terrestrial Invertebrate	Polydesmida	II	c	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Complete removal of forest habitat for logging would render the habitat non-viable for this species.(5.3.1)		
183	Nannaria filicata	The Fern Twisted-Claw Millipede	Terrestrial Invertebrate	Polydesmida	II	c	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Complete removal of forest habitat for logging would render the habitat non-viable for this species.(5.3.1)		
184	Nannaria acroteria	The Fork Mountain Twisted-Claw Millipede	Terrestrial Invertebrate	Polydesmida	II	c	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Complete removal of forest habitat for logging would render the habitat non-viable for this species.(5.3.1)		
185	Nannaria hokie	The Hokie Twisted-Claw Millipede	Terrestrial Invertebrate	Polydesmida	III	b	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Complete removal of forest habitat for logging would render the habitat non-viable for this species.(5.3.1)		

	A	B	C	D	E	F	G	H	L	P	T	U	V
1	**Scientific_Name**	**Common_Name**	**Grouping**	**Type**	**Tier**	**COR**	**Habitats**	**Threat_Code**	**Threat_Description**	**Threat_Long**	**Actions**	**Working_Lands**	**Notes**
186	Nannaria piccolia	The Lichen-Loving Twisted-Claw Millipede	Terrestrial Invertebrate	Polydesmida	II	a	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Complete removal of forest habitat for logging would render the habitat non-viable for this species.(5.3.1)		
187	Nannaria marianae	The Maple Flats Twisted-Claw Millipede	Terrestrial Invertebrate	Polydesmida	II	c	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Complete removal of forest habitat for logging would render the habitat non-viable for this species.(5.3.1)		
188	Nannaria lutra	The Otter Twisted-Claw Millipede	Terrestrial Invertebrate	Polydesmida	II	c	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Complete removal of forest habitat for logging would render the habitat non-viable for this species.(5.3.1)		
189	Nannaria spiralis	The Spiral Twisted-Claw Millipede	Terrestrial Invertebrate	Polydesmida	III	c	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Complete removal of forest habitat for logging would render the habitat non-viable for this species.(5.3.1)		
190	Nannaria stellapolis	The Star City Twisted-Claw Millipede	Terrestrial Invertebrate	Polydesmida	II	c	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Complete removal of forest habitat for logging would render the habitat non-viable for this species.(5.3.1)		
191	Nannaria tenuis	The Svelte Twisted-Claw Millipede	Terrestrial Invertebrate	Polydesmida	II	b	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Complete removal of forest habitat for logging would render the habitat non-viable for this species.(5.3.1)		
192	Nannaria liriodendra	The Tuliptree Twisted-Claw Millipede	Terrestrial Invertebrate	Polydesmida	II	c	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Complete removal of forest habitat for logging would render the habitat non-viable for this species.(5.3.1)		
193	Nannaria paraptoma	The Tumbling Twisted-Claw Millipede	Terrestrial Invertebrate	Polydesmida	II	b	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Complete removal of forest habitat for logging would render the habitat non-viable for this species.(5.3.1)		
194	Hypochilus thorelli	Thorell's lampshade-web spider	Terrestrial Invertebrate	Araneae	IV	c	Forests and Woodlands, Cliff and Talus	1.1.2, 6.1.3,	Low-Density Housing Areas / Recreational Use of Cliffs and Rock Faces /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / e.g., rock climbing, hang-gliding /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Typical habitat is rock outcrops , some of which could be impacted by rock climbing and similar activities (6.1.3)		

	A	B	C	D	E	F	G	H	L	P	T	U	V
1	**Scientific_Name**	**Common_Name**	**Grouping**	**Type**	**Tier**	**COR**	**Habitats**	**Threat_Code**	**Threat_Description**	**Threat_Long**	**Actions**	**Working_Lands**	**Notes**
195	Appalachioria turneri	Turner's millipede	Terrestrial Invertebrate	Polydesmida	II	c	Forests and Woodlands	1.1.2, 5.3.1,	Low-Density Housing Areas / Complete Removal of the Forest Cove /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Complete removal of forest habitat for logging would render the habitat non-viable for this species.(5.3.1)		
196	Helicodiscus multidens	Twilight coil	Terrestrial Invertebrate	Terr. Snail	III	a	Forests and Woodlands, Caves and Karst, Riparian and Floodplains	2.2.1, 5.3.1, 1.1	Plantation of Pulpwood / Complete Removal of the Forest Cove / Housing and Urban Areas	Cultivation of hybrid poplars and other species that are used for pulp production. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). / Anything that is related to or integrated with urban or housing structures. Urban areas (cities), suburbs, villages, cottages, shopping areas, offices, schools, hospitals, and urban parks, among others.	Habitat protection is essential, so cooperation and education of land owners should be high priority. Limit conversion of forested lands to plantation production.(2.2.1), Habitat protection is essential, so cooperation and education of land owners should be high priority. Avoid clearcutting suitable and/or occupied habitats. (5.3.1), Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs. (1.1)		
197	Pseudotremia contorta	Twisted-gonopod cave millipede	Terrestrial Invertebrate	Chordeumatida	II	c	Caves and Karst	1.1.2, 11.3.3,	Low-Density Housing Areas / Gradual Temperature Change /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / e.g., altered sex-ratio in species relying upon a temperature dependent sex determination, reduction of dissolved oxygen that is available to fish species, earlier ice-free dates, thawing of permafrost affecting bird breeding sites. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), This is a cave / karst species which is threatened by increasing worldwide temperatures caused by climate change (Mammola et al. 2018). (11.3.3)		
198	Lissocreagris valentinei	Valentine's cave pseudoscorpion	Terrestrial Invertebrate	Pseudoscorpiones	I	b	Caves and Karst	1.1.2	Low-Density Housing Areas / /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2)		
199	Caecidotea vandeli	Vandel's cave isopod	Terrestrial Invertebrate	Isopoda	IV	c	Caves and Karst	1.1.2, 7.2.7, 9.3.2	Low-Density Housing Areas / Withdrawal of Groundwater / Soil Erosion, Sedimentation	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / Withdrawal of groundwater for human consumption, crop production or other purposes. E.g., pumping water from the water table. / Erosion and sedimentation that are due to agricultural or silvicultural activities, regardless of the presence of local drainage systems (threat 7.2.4 and 7.2.5).	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), Groundwater quality and quantity are important to this species (7.2.7), Follow BMPs to limit erosion and sedimentation (9.3.2)		
200	Pallifera varia	Variable mantleslug	Terrestrial Invertebrate	Terr. Snail	III	a	Forests and Woodlands, Boreal Forests	5.3.1, 1.1,	Complete Removal of the Forest Cove / Housing and Urban Areas /	Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). / Anything that is related to or integrated with urban or housing structures. Urban areas (cities), suburbs, villages, cottages, shopping areas, offices, schools, hospitals, and urban parks, among others. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. Avoid clearcutting suitable and/or occupied habitats. (5.3.1), Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs. (1.1)		
201	Conotyla venetia	Venetia millipede	Terrestrial Invertebrate	Chordeumatida	II	c	Forests and Woodlands	1.1.2, 11.3.3,	Low-Density Housing Areas / Gradual Temperature Change /	Extensive development that is residential (including resorts), where the spacing allows ecological functions to continue to some extent. This type of development is seen particularly in rural and agroforestry areas. E.g., residential buildings in agricultural areas, cottages, vacation homes near water bodies, ecotourism lodges, fishing resorts, backcountry ski lodges. / e.g., altered sex-ratio in species relying upon a temperature dependent sex determination, reduction of dissolved oxygen that is available to fish species, earlier ice-free dates, thawing of permafrost affecting bird breeding sites. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. (1.1.2), A cold weather-active species that may be susceptible to rising temperatures from climate change. (11.3.3)		

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1	**Scientific_Name**	**Common_Name**	**Grouping**	**Type**	**Tier**	**COR**	**Habitats**	**Threat_Code**	**Threat_Description**	**Threat_Long**	**Actions**	**Working_Lands**	**Notes**
202	Patera panselenus	Virginia bladetooth	Terrestrial Invertebrate	Terr. Snail	III	a	Forests and Woodlands, Cliffs and Talus, Riparian and Floodplains	2.2.1, 5.3.1, 1.1	Plantation of Pulpwood / Complete Removal of the Forest Cove / Housing and Urban Areas	Cultivation of hybrid poplars and other species that are used for pulp production. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). / Anything that is related to or integrated with urban or housing structures. Urban areas (cities), suburbs, villages, cottages, shopping areas, offices, schools, hospitals, and urban parks, among others.	Habitat protection is essential, so cooperation and education of land owners should be high priority. Limit conversion of forested lands to plantation production.(2.2.1), Habitat protection is essential, so cooperation and education of land owners should be high priority. Avoid clearcutting suitable and/or occupied habitats. (5.3.1), Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs. (1.1)		
203	Polygyriscus virginianus	Virginia fringed mountain snail (coil)	Terrestrial Invertebrate	Terr. Snail	I	a	Riparian and Floodplains	9.3.3, 4.1.1, 3.2.3	Herbicides and Pesticides / Roads / Quarries and Sand Pits	Includes the use of inputs for controlling crop pests. E.g., herbicides, insecticides, fungicides. / /	Coordinate with the Virginia Dept of Transportation and landowners where the snail is present, to minimize the use of chemicals along the right-of-way and on property where the snail is present, particularly herbicide use along the roadside. (9.3.3), Coordinate with Virginia Dept of Transportation to limit road widening in the area, as this could impact and eliminate habitat. (4.1.1), Limit quarry activity in the area and no reactivation of old quarries (3.2.3)		
204	Philomycus virginicus	Virginia mantleslug	Terrestrial Invertebrate	Terr. Snail	III	a	Forests and Woodlands, Boreal Forests	5.3.1, 1.1,	Complete Removal of the Forest Cove / Housing and Urban Areas /	Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). / Anything that is related to or integrated with urban or housing structures. Urban areas (cities), suburbs, villages, cottages, shopping areas, offices, schools, hospitals, and urban parks, among others. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. Avoid clearcutting suitable and/or occupied habitats. (5.3.1), Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs. (1.1)		
205	Escaryus orestes	Whitetop mountain centipede	Terrestrial Invertebrate	Geophilomorpha	II	c	Boreal Forest	11.1.1, 5.3.1,	Changes in Vegetation Communities / Complete Removal of the Forest Cove /	Major changes in an ecosystem resulting in changes to vegetation communities distinguished from natural vegetation succession, which may threaten open-country species (Threat 7.3.2). E.g., migration of deciduous trees towards the boreal forest, rising sea levels, desertification, thawing permafrost (in tundra), coral bleaching. / Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). /	High elevation species susceptible to climate change (11.1.1), Complete removal of forest habitat for logging would render the habitat non-viable for this species.(5.3.1)		
206	Mesomphix rugeli	Wrinkled button	Terrestrial Invertebrate	Terr. Snail	I	a	Forests and Woodlands, Boreal Forests, Transportation Networks	5.3.1, 1.1, 9.3.3	Complete Removal of the Forest Cove / Housing and Urban Areas / Herbicides and Pesticides	Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). / Anything that is related to or integrated with urban or housing structures. Urban areas (cities), suburbs, villages, cottages, shopping areas, offices, schools, hospitals, and urban parks, among others. / Includes the use of inputs for controlling crop pests. E.g., herbicides, insecticides, fungicides.	Habitat protection is essential, so cooperation and education of land owners should be high priority. Avoid clearcutting suitable and/or occupied habitats. (5.3.1), Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs. (1.1), Coordinate with the Virginia Dept of Transportation and landowners where the snail is present, to minimize the use of chemicals along the right-of-way and on property where the snail is present, particularly herbicide use along the roadside. (9.3.3)	Life Stage - All; Type - mixed harwoods, spruce/fir; Substrate - moist leaf litter; Features - wooded hillsides and mountains; along roadsides adjacent to this habitat	
207	Ventridens pilsbryi	Yellow dome	Terrestrial Invertebrate	Terr. Snail	IV	a	Forests and Woodlands	5.3.1, 1.1,	Complete Removal of the Forest Cove / Housing and Urban Areas /	Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). / Anything that is related to or integrated with urban or housing structures. Urban areas (cities), suburbs, villages, cottages, shopping areas, offices, schools, hospitals, and urban parks, among others. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. Avoid clearcutting suitable and/or occupied habitats. (5.3.1), Habitat protection is essential, so cooperation and education of localities and land owners should be high priority. Avoid developing critical areas for the species or over developing areas where the species occurs. (1.1)		

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1	**Scientific_Name**	**Common_Name**	**Grouping**	**Type**	**Tier**	**COR**	**Habitats**	**Threat_Code**	**Threat_Description**	**Threat_Long**	**Actions**	**Working_Lands**	**Notes**
208	Mesodon clausus	Yellow globelet snail	Terrestrial Invertebrate	Terr. Snail	IV	a	Riparian and Floodplains, Non-Tidal Wetlands, Transportation Networks	5.3.1, 9.3.3, 4.1.1	Complete Removal of the Forest Cove / Herbicides and Pesticides / Roads	Cutting removing the majority of the forest cover. E.g., clear-cutting and related cuts (CT, CRS, CPRS, CPHRS, CPPTM). / Includes the use of inputs for controlling crop pests. E.g., herbicides, insecticides, fungicides. /	Habitat protection is essential, so cooperation and education of land owners should be high priority. Avoid clearcutting suitable and/or occupied habitats, partocualrly riparian areas. (5.3.1), Coordinate with the Virginia Dept of Transportation and landowners where the snail is present, to minimize the use of chemicals along the right-of-way and on property where the snail is present, particularly herbicide use along the roadside. (9.3.3), Coordinate with Virginia Dept of Transportation to limit road widening in the area, as this could impact and eliminate habitat. (4.1.1)	Life Stage - All; Substrate - herbaceous plants; Features - low, wet areas including roadsides, damp roadside and railroad ditches, and old parking lots	