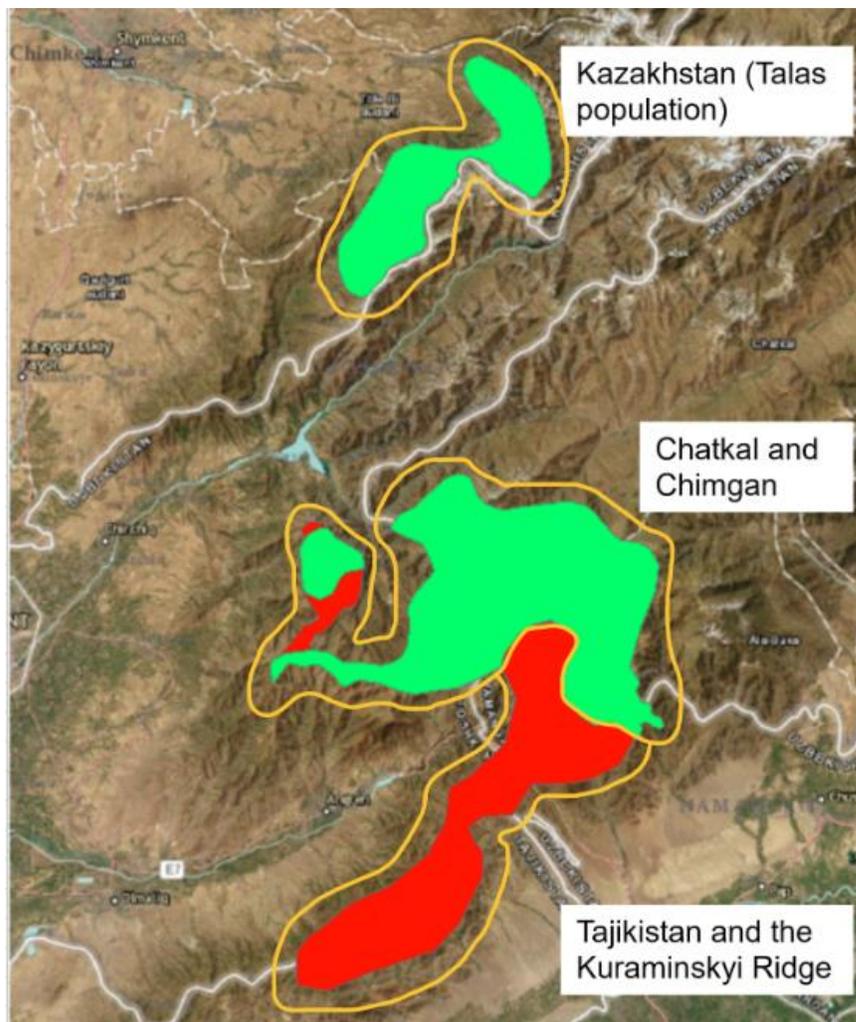


### Menzbier's Marmot (*Marmota menzbieri*)



**Figure S1.** Indigenous and current range of the *M. menzbieri*. Areas in green show the extant range of the species, areas in red indicate the additional parts of the indigenous range where the species is now extirpated. Spatial unit delineation is indicated with yellow borders.

**Table S1.** Conservation Actions (list of [action codes](#))

<b>Classification</b>	<b>Full description</b>	<b>Past actions (no longer occurring)</b>	<b>Current actions</b>	<b>Actions planned within 10 years</b>	<b>Actions that could be implemented in the long-term aspiration scenario</b>
1.1.	1.1. Land/water protection: Site/area protection	x		Kyrgyzstan: It is most likely that within the next decade no new reserves will be established, on contrary we might lose some part of protected areas in Besh-Aral reserve for infrastructural development projects. However, a small population we found outside of the protected areas could be joined to the Besh-Aral reserve if the government decides to swap land with the reserve. About 200 ha will be exchanged between the mining company and the reserve. There is a plan to build a highway to Tashkent using the territory of Ken-Bulun section of the Besh-Aral reserve where we found the highest number of Menzbier's Marmots. Uzbekistan:	Designation of the PA/or OECM in Angren Plateau in Uzbekistan

<b>Classification</b>	<b>Full description</b>	<b>Past actions (no longer occurring)</b>	<b>Current actions</b>	<b>Actions planned within 10 years</b>	<b>Actions that could be implemented in the long-term aspiration scenario</b>
				Planned to organize buffer zone of Chatkal Biosphere reserve, where marmot's habitats include the Pulatkhan mountain plateau, Big and Small Maidantal mountains, Revashli and Uchkat sites.	
1.2.	1.2. Land/water protection: Resource & habitat protection				
2.1.	2.1. Land/water management: Site/area management		x	x	x
2.2.	2.2. Land/water management: Invasive/problematic species control				
2.3.	2.3. Land/water management: Habitat & natural process restoration				
3.1.1.	3.1.1. Harvest management		x (Poaching prohibited, and patrollers in PAs to help control poaching. Until 1972 there was marmot harvesting in the	x	x

<b>Classification</b>	<b>Full description</b>	<b>Past actions (no longer occurring)</b>	<b>Current actions</b>	<b>Actions planned within 10 years</b>	<b>Actions that could be implemented in the long-term aspiration scenario</b>
			Chatkal population (part of Kyrgyzstan).)		
3.1.2.	3.1.2. Trade management				
3.1.3.	3.1.3. Limiting population growth				
3.2	3.2 Species recovery				
3.3.1.	3.3.1. Species re-introduction: Reintroduction	x (unsuccessful attempt at reintroduction in Uzbekistan in 1970s - marmots disappeared or relocated)			
3.3.2.	3.3.2. Species re-introduction: Benign introduction				
3.4.1.	3.4.1. Ex-situ conservation: Captive breeding/artificial propagation	x			
3.4.2.	3.4.2. Ex-situ conservation: Genome resource bank				
4.1.	4.1. Education and Awareness: Formal education		x	x	x

<b>Classification</b>	<b>Full description</b>	<b>Past actions (no longer occurring)</b>	<b>Current actions</b>	<b>Actions planned within 10 years</b>	<b>Actions that could be implemented in the long-term aspiration scenario</b>
4.2.	4.2. Education and Awareness: Training				
4.3.	4.3. Education and Awareness: Awareness & communications	x (previous community level engagement on species conservation in Uzbekistan and Kyrgyzstan)	x (Ongoing awareness raising with shepherd in Besh-Aral reserve, as well as by Kok-Serek Pasture committee for the population outside of protected areas in Kyrgyzstan. Awareness raising activities also for the local community members (mostly school students) to improve their knowledge about the species.)	x (Changing perception on how to use other treatments for cancer and TB, which are currently treated with marmot fat.)	x
5.1.1.	5.1.1. Legislation, International level				
5.1.2.	5.1.2. Legislation, National level				
5.1.3.	5.1.3. Legislation, Sub-national level		x	x	x
5.1.4.	5.1.4. Legislation, scale unspecified				
5.2.	5.2. Policies and regulations				

<b>Classification</b>	<b>Full description</b>	<b>Past actions (no longer occurring)</b>	<b>Current actions</b>	<b>Actions planned within 10 years</b>	<b>Actions that could be implemented in the long-term aspiration scenario</b>
5.3.	5.3. Private sector standards & codes				
5.4.1.	5.4.1. Compliance and enforcement- International level				
5.4.2.	5.4.2. Compliance and enforcement- National level				
5.4.3.	5.4.3. Compliance and enforcement- Sub-national level		x (Patrolling in Pas.)	x	x
5.4.4.	5.4.4. Compliance and enforcement- Scale unspecified				
6.1.	6.1. Livelihood, economic & other incentives: Linked enterprises & livelihood alternatives				
6.2.	6.2. Livelihood, economic & other incentives: Substitution				
6.3.	6.3. Livelihood, economic & other incentives: Market forces				

Classification	Full description	Past actions (no longer occurring)	Current actions	Actions planned within 10 years	Actions that could be implemented in the long-term aspiration scenario
6.4.	6.4. Livelihood, economic & other incentives: Conservation payments				
6.5.	6.5. Livelihood, economic & other incentives: Non-monetary values			x (Changing perception on how to use other treatments for cancer and TB, which are currently treated with marmot fat, driving poaching.)	

**Table S2.** Threats (list of [threat codes](#))

<b>Spatial unit</b>	<b>Name</b>	<b>Past threats (no longer occurring)</b>	<b>Current threats</b>	<b>Threats expected to emerge or continue over next 10 years</b>	<b>Threats that would be relevant in the long-term aspiration scenario</b>
1.1	1.1 Residential & commercial development: Housing & urban areas				
1.2	1.2 Residential & commercial development: Commercial & industrial areas				
1.3	1.3 Residential & commercial development: Tourism & recreation areas				
2.1.1	2.1.1 Agriculture & aquaculture: Annual & perennial non-timber crops: Shifting agriculture				
2.1.2	2.1.2 Agriculture & aquaculture: Annual & perennial non-timber crops: Small-holder farming				
2.1.3	2.1.3 Agriculture & aquaculture: Annual & perennial non-timber crops: Agro-industry farming				
2.1.4	2.1.4 Agriculture & aquaculture: Annual & perennial non-timber crops: Scale Unknown/Unrecorded	x (Kyrgyzstan. Livestock from Uzbekistan had been grazing on the territory of Besh-Aral reserve until late 90s.)	x	x	x
2.2.1	2.2.1 Agriculture & aquaculture: Wood & pulp plantations: Small-holder plantations				

2.2.2	2.2.2 Agriculture & aquaculture: Wood & pulp plantations: Agro- industry plantations				
2.2.3	2.2.3 Agriculture & aquaculture: Wood & pulp plantations: Scale Unknown/Unrecorded				
2.3.1	2.3.1 Agriculture & aquaculture: Livestock farming & ranching: Nomadic grazing	x (During the Soviet times, big herds of sheep grazed on high altitude meadows where marmots live. After the collapse of USSR, grazing pressure dropped significantly.)			
2.3.2	2.3.2 Agriculture & aquaculture: Livestock farming & ranching: Small-holder grazing, ranching or farming		x (Over grazing makes grassland unsuitable - marmots are found in longer grasses. Shepherd's dogs eat marmots.)	x	x
2.3.3	2.3.3 Agriculture & aquaculture: Livestock farming & ranching: Agro-industry grazing, ranching or farming				
2.3.4	2.3.4 Agriculture & aquaculture: Livestock farming & ranching: Scale Unknown/Unrecorded				
2.4.1	2.4.1 Agriculture & aquaculture: Marine & freshwater aquaculture: Subsistence/artisanal aquaculture				

2.4.2	2.4.2 Agriculture & aquaculture: Marine & freshwater aquaculture: Industrial aquaculture				
2.4.3	2.4.3 Agriculture & aquaculture: Scale Unknown/Unrecorded				
3.1	3.1 Energy production & mining: Oil & gas drilling				
3.2	3.2 Energy production & mining: Mining & quarrying	x (Mining and gravel quarry contributed to habitat change and extirpation in Tajikistan.)		x (Kyrgyzstan. Gold mining could potentially cause a problem to Menzbier's Marmot populations that is outside of the protected areas.)	x
3.3	3.3 Energy production & mining: Renewable energy				
4.1	4.1 Transportation & service corridors: Roads & railroads			x (Uzbekistan and Kyrgyzstan are planning to connect countries through a highway that will go through the natural habitat of <i>M. menzbieri</i> .)	x
4.2	4.2 Transportation & service corridors: Utility & service lines				
4.3	4.3 Transportation & service corridors: Shipping lanes				
4.4	4.4 Transportation & service corridors: Flight paths				
5.1.1	5.1.1 Biological resource use: Hunting & collecting terrestrial		x (Targeted mainly for fat for use in	x	x

	animals: Intentional use (species being assessed is the target)		medicine, but also sometimes eaten.)		
5.1.2	5.1.2 Biological resource use: Hunting & collecting terrestrial animals: Unintentional effects (species being assessed is not the target)				
5.1.3	5.1.3 Biological resource use: Hunting & collecting terrestrial animals: Persecution/control				
5.1.4	5.1.4 Biological resource use: Hunting & collecting terrestrial animals: Motivation Unknown/Unrecorded				
5.2.1	5.2.1 Biological resource use: Gathering terrestrial plants: Intentional use (species being assessed is the target)				
5.2.2	5.2.2 Biological resource use: Gathering terrestrial plants: Unintentional effects (species being assessed is not the target)				
5.2.3	5.2.3 Biological resource use: Gathering terrestrial plants: Persecution/control				
5.2.4	5.2.4 Biological resource use: Gathering terrestrial plants: Motivation Unknown/Unrecorded				
5.3.1	5.3.1 Biological resource use: Logging & wood harvesting: Intentional use: subsistence/small scale (species				

	being assessed is the target [harvest]				
5.3.2	5.3.2 Biological resource use: Logging & wood harvesting: Intentional use: large scale (species being assessed is the target)[harvest]				
5.3.3	5.3.3 Biological resource use: Logging & wood harvesting: Unintentional effects: subsistence/small scale (species being assessed is not the target)[harvest]				
5.3.4	5.3.4 Biological resource use: Logging & wood harvesting: Unintentional effects: large scale (species being assessed is not the target)[harvest]				
5.3.5	5.3.5 Biological resource use: Logging & wood harvesting: Motivation Unknown/Unrecorded				
5.4.1	5.4.1 Biological resource use: Fishing & harvesting aquatic resources: Intentional use: subsistence/small scale (species being assessed is the target)[harvest]				
5.4.2	5.4.2 Biological resource use: Fishing & harvesting aquatic resources: Intentional use: large scale (species being assessed is the target)[harvest]				

5.4.3	5.4.3 Biological resource use: Fishing & harvesting aquatic resources: Unintentional effects: subsistence/small scale (species being assessed is not the target)[harvest]				
5.4.4	5.4.4 Biological resource use: Fishing & harvesting aquatic resources: Unintentional effects: large scale (species being assessed is not the target)[harvest]				
5.4.5	5.4.5 Biological resource use: Fishing & harvesting aquatic resources: Persecution/control				
5.4.6	5.4.6 Biological resource use: Fishing & harvesting aquatic resources: Motivation Unknown/Unrecorded				
6.1	6.1 Human intrusions & disturbance: Recreational activities				
6.2	6.2 Human intrusions & disturbance: War, civil unrest & military exercises				
6.3	6.3 Human intrusions & disturbance: Work & other activities				
7.1.1	7.1.1 Natural system modifications: Fire & fire suppression: Increase in fire frequency/intensity				

7.1.2	7.1.2 Natural system modifications: Fire & fire suppression: Suppression in fire frequency/intensity				
7.1.3	7.1.3 Natural system modifications: Fire & fire suppression: Trend Unknown/Unrecorded				
7.2.1	7.2.1 Natural system modifications: Dams & water management/use: Abstraction of surface water (domestic use)				
7.2.2	7.2.2 Natural system modifications: Dams & water management/use: Abstraction of surface water (commercial use)				
7.2.3	7.2.3 Natural system modifications: Dams & water management/use: Abstraction of surface water (agricultural use)				
7.2.4	7.2.4 Natural system modifications: Dams & water management/use: Abstraction of surface water (unknown use)				
7.2.5	7.2.5 Natural system modifications: Dams & water management/use: Abstraction of ground water (domestic use)				
7.2.6	7.2.6 Natural system modifications: Dams & water management/use: Abstraction of ground water (commercial use)				

7.2.7	7.2.7 Natural system modifications: Dams & water management/use: Abstraction of ground water (agricultural use)				
7.2.8	7.2.8 Natural system modifications: Dams & water management/use: Abstraction of ground water (unknown use)				
7.2.9	7.2.9 Natural system modifications: Dams & water management/use: Small dams				
7.2.10	7.2.10 Natural system modifications: Dams & water management/use: Large dams				
7.2.11	7.2.11 Natural system modifications: Dams & water management/use: Dams (size unknown)				
7.3	7.3 Natural system modifications: Other ecosystem modifications				
8.1.1	8.1.1 Invasive & other problematic species, genes & diseases: Invasive non-native/alien species/diseases: Unspecified species				
8.1.2	8.1.2 Invasive & other problematic species, genes & diseases: Invasive non-native/alien species/diseases: Named species		x (Direct mortality from shepherd's dogs and diseases.)	x	x
8.2.1	8.2.1 Invasive & other problematic species, genes & diseases: Problematic native				

	species/diseases: Unspecified species				
8.2.2	8.2.2 Invasive & other problematic species, genes & diseases: Problematic native species/diseases: Named species				
8.3	8.3 Invasive & other problematic species, genes & diseases: Introduced genetic material				
8.4.1	8.4.1 Invasive & other problematic species, genes & diseases: Problematic species/diseases of unknown origin: Unspecified species				
8.4.2	8.4.2 Invasive & other problematic species, genes & diseases: Problematic species/diseases of unknown origin: Named species				
8.5.1	8.5.1 Invasive & other problematic species, genes & diseases: Viral/prion-induced diseases: Unspecified "species" (disease)				
8.5.2	8.5.2 Invasive & other problematic species, genes & diseases: Viral/prion-induced diseases: Named "species" (disease)				
8.6	8.6 Invasive & other problematic species, genes & diseases: Diseases of unknown cause	x (Unknown disease outbreak in Kyrgyzstan in 1995-96 when 25% of the	x (Continuing threat of potential disease outbreak	x	x

		populations was lost; and 1996-2000 disease outbreak in Kazakhstan (personnel communication.)	as cause unknown.)		
9.1.1	9.1.1 Pollution: Domestic & urban waste water: Sewage				
9.1.2	9.1.2 Pollution: Domestic & urban waste water: Run-off				
9.1.3	9.1.3 Pollution: Domestic & urban waste water: Type Unknown/Unrecorded				
9.2.1	9.2.1 Pollution: Industrial & military effluents: Oil spills				
9.2.2	9.2.2 Pollution: Industrial & military effluents: Seepage from mining				
9.2.3	9.2.3 Pollution: Industrial & military effluents: Type Unknown/Unrecorded				
9.3.1	9.3.1 Pollution: Agricultural & forestry effluents: Nutrient loads				
9.3.2	9.3.2 Pollution: Agricultural & forestry effluents: Soil erosion, sedimentation				
9.3.3	9.3.3 Pollution: Agricultural & forestry effluents: Herbicides & pesticides				
9.3.4	9.3.4 Pollution: Agricultural & forestry effluents: Type Unknown/Unrecorded				
9.4	9.4 Pollution: Garbage & solid waste				

9.5.1	9.5.1 Pollution: Air-borne pollutants: Acid rain				
9.5.2	9.5.2 Pollution: Air-borne pollutants: Smog				
9.5.3	9.5.3 Pollution: Air-borne pollutants: Ozone				
9.5.4	9.5.4 Pollution: Air-borne pollutants: Type Unknown/Unrecorded				
9.6.1	9.6.1 Pollution: Excess energy: Light pollution				
9.6.2	9.6.2 Pollution: Excess energy: Thermal pollution				
9.6.3	9.6.3 Pollution: Excess energy: Noise pollution				
9.6.4	9.6.4 Pollution: Excess energy: Type Unknown/Unrecorded				
10.1	10.1 Geological events: Volcanoes				
10.2	10.2 Geological events: Earthquakes/tsunamis				
10.3	10.3 Geological events: Avalanches/landslides				
11.1	11.1 Climate change & severe weather: Habitat shifting & alteration		x	x	x
11.2	11.2 Climate change & severe weather: Droughts		x	x	x
11.3	11.3 Climate change & severe weather: Temperature extremes				
11.4	11.4 Climate change & severe weather: Storms & flooding				

11.5	11.5 Climate change & severe weather: Other impacts				
12.1	12.1 Other threat				

## **Appendix 1: Assessor Self-Review**

1. **Disclose any potential conflicts of interest which could bias the assessment.**  
No conflicts of interest to disclose.
  
2. **Is there any discrepancy between this assessment and the Red List assessment for the species? If so, comment on the likely reason for this discrepancy.**  
None
  
3. **Review the impact that you assigned to the various threats and conservation actions. Would the trajectory of the species be very different if other choices were made? If so, review your justification for these choices. If appropriate, widen the bounds on tabs 4 and 5-8 (change the lower and upper plausible values) to reflect the uncertainty introduced by the possibility of these other choices. How, if at all, did this review question cause this assessment to change? If no changes were needed, please write "no changes".**  
No changes.