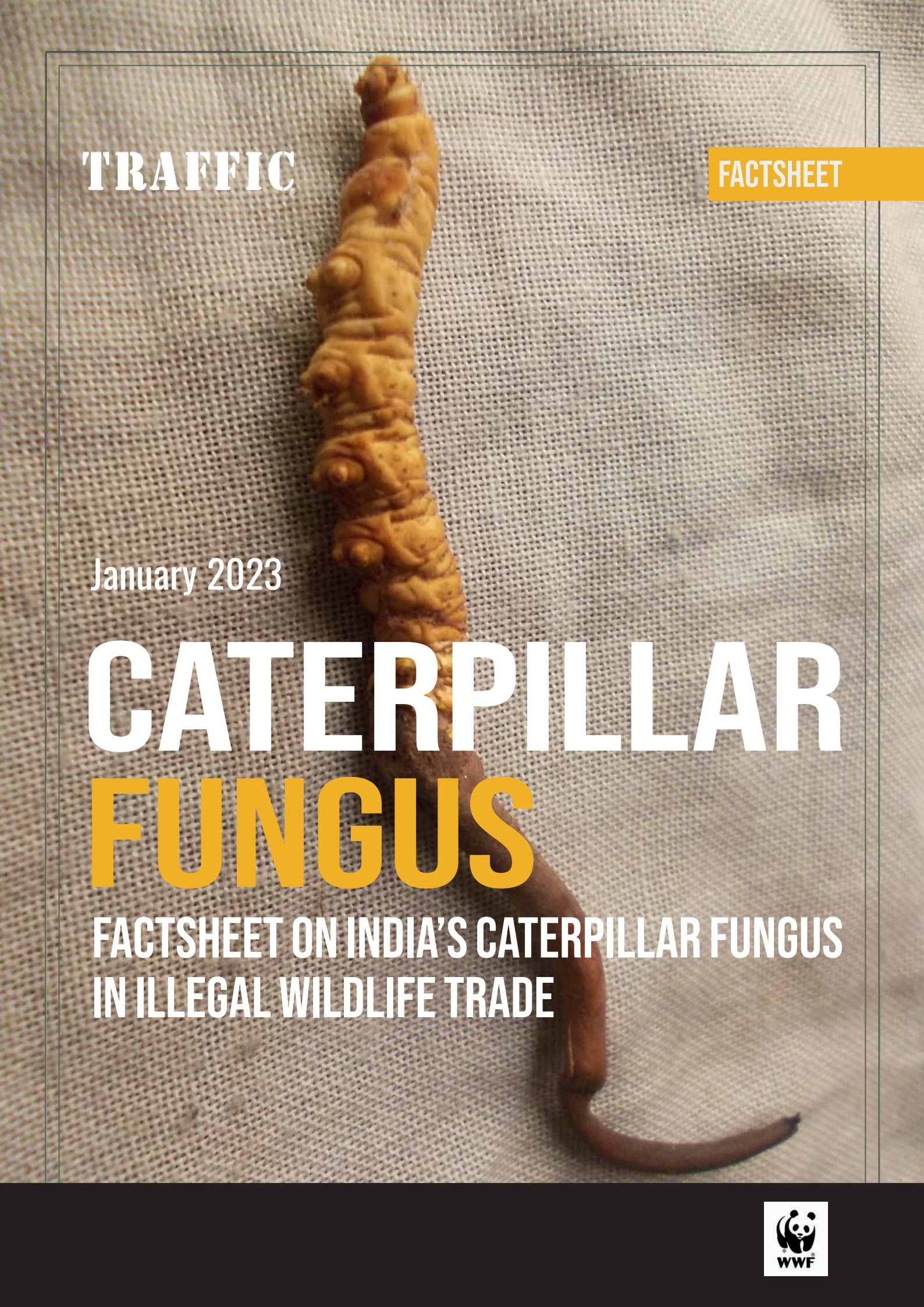


TRAFFIC

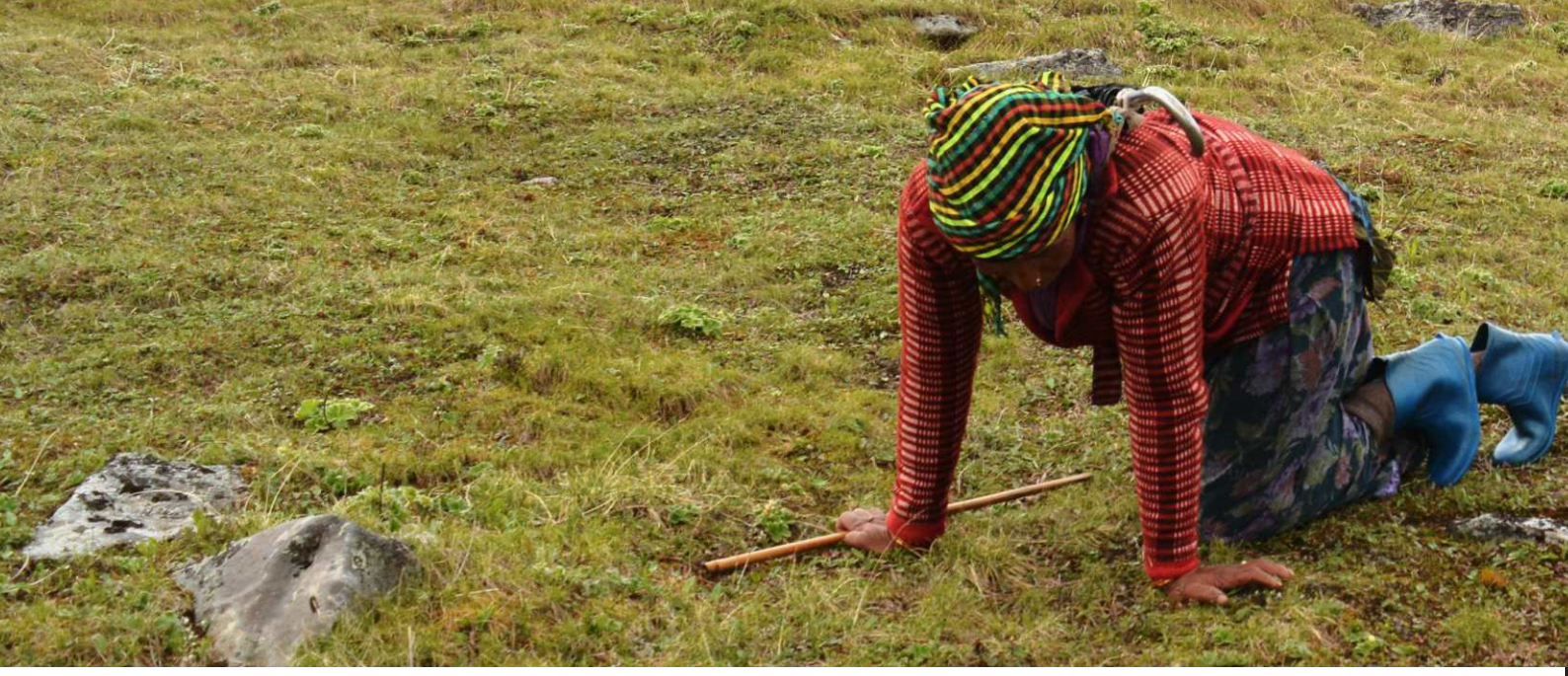
FACTSHEET

January 2023

CATERPILLAR FUNGUS

FACTSHEET ON INDIA'S CATERPILLAR FUNGUS IN ILLEGAL WILDLIFE TRADE

WWF



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Caterpillar Fungus *Ophiocordyceps sinensis*, locally called Yarsa Gumba, Himalayan Gold, or *Keera Ghaas*, is endemic to the Himalayan region. It is found in China, Bhutan, India and Nepal (Shrestha and Bawa, 2014). This fungus exhibits a unique association of fungi and ghost moths of the genus *Thitarodes* (Wang *et al*. 2020), infecting their larvae living underground. Around 57 species of insects are recognised as potential hosts for the fungus (Wang and Yao 2011).

DO YOU KNOW?

- The fungus uses the body of the infected insect to withstand winter, appearing like a winter worm and emerging in the late spring or summer of the following year in the form of a herb or grass, thus earning the name "Winter worm, Summer grass" in local languages (Pegler *et al.*, 1994; Yao, 2004).
- The Caterpillar Fungus is a flagship species, acting as an ambassador for the conservation of fungi and its habitat in the Tibetan Plateau (Cannon, 2011).

ECOLOGICAL ROLE

Fungi of the genus *Ophiocordyceps* has been found to form a symbiotic relationship with insects and plant species in its habitat (Cao *et al.,* 2020). The abundance and growth of Caterpillar Fungus is associated with plant species composition and soil characteristics. Its presence is an indication of a healthy alpine ecosystem.

SIZE, HABITAT, DISTRIBUTION AND POPULATION STATUS:

AVERAGE SIZE	HABITAT	DISTRIBUTION	POPULATION TREND
Approximately 4–12 cm in length and 0.14–0.4 cm in width (Ghanshyam and Manvitha, 2017)	Alpine grasslands at 3,000-5,000 m elevation (Yang, 2020)	Himachal Pradesh, Sikkim, and Uttarakhand (Yang, 2020)	↓ (Yang, 2020)

CONSERVATION STATUS

INTERNATIONAL UNION FOR CONSERVATION OF NATURE (IUCN)	Vulnerable (Yang, 2020)
WILDLIFE (PROTECTION) ACT, 1972, INDIA	Not Listed
CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES OF WILD FAUNA AND FLORA (CITES)	Not Listed

In India, the extraction/harvesting and trade of Caterpillar Fungus are regulated through permits, guidelines, and policies of the range states, such as Sikkim and Uttarakhand. These policies aim to undertake sustainable use of the fungus and ensure economic support to local collectors. Harvesting or trading the fungus in violation of the regulations and policies is a punishable offence.

Extraction / harvesting and trade of Caterpillar Fungus in India is regulated through permits, guidelines, and policies of the range states - Sikkim and

THREATS

One of the significant threats to the survival of Caterpillar Fungus and its habitat is overexploitation driven by its demand in the international markets (Negi *et al., 2016)*. Other issues concerning the fungus are habitat loss and degradation due to developmental activities, including road and tele-communication infrastructure development making these areas more accessible and connected (Pradhan *et al*., 2020). Like many high altitude species, Caterpillar Fungus prefers colder climates for growth, and the changing conditions within its habitat due to climate change threatens the species (Hopping *et al.*, 2018).

OVER HARVESTING FOR ILLEGAL WILDLIFE TRADE

- Caterpillar Fungus is regarded as one of the world's most expensive natural medical resources. The increasing demand and price of the species in the traditional medicine market contribute to its overexploitation (Shrestha, 2012).
- Caterpillar Fungus is utilised in traditional medicine as an aphrodisiac and in the treatment of cancer, asthma, inflammatory diseases, and ailments of the lungs, kidney, and liver (Rathor*, et al.,* 2014; Shrestha and Bawa, 2013; Shashidhar, *et al.,* 2013; Qiu, 2013; Shrestha, 2012).
- The existing regulatory mechanisms for the trade of Caterpillar Fungus in the different range states of India are not consistent and applicable across India. (Yadav *et al.,* 2019; Wallrapp *et al*., 2019).
- Insufficient mechanisms to monitor and regulate the trade in Caterpillar Fungus and the international demand for this species have been attributed as drivers for the trade (Negi *et al*., 2016; Yadav *et al*., 2016; Caplins *et al.*, 2018).
- Analysis of illegal trade from 2008 to 2018 (Yadav and Badola, 2019) estimated that the trade network starts from collectors in villages in the high-altitude regions in India and transit to border towns, which function as local trade hubs. The fungus travels through the porous Indo-Nepal border via numerous informal trade channels to reach Nepal easily. The fungus then travels further to international traditional medicine markets, primarily in China, where the species are in high demand. There have also been recorded instances of seizure of the fungus alongside other wildlife contrabands.

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Caterpillar Fungus is world's most expensive natural medical resource and exploited to meet increasing demand.

CONSERVATION EFFORTS

- There are several government regulations in Sikkim and Uttarakhand to curb unsustainable harvests of Caterpillar Fungus. Also present are several complimentary policies to curb the illegal trade of the species. These policies limit the harvesting period, scale, and the number of harvesters within site, emphasising maintaining habitat integrity and decreasing degradation.

- In 2016, Sikkim's Forest, Environment, and Wildlife Management Department introduced rules and guidelines for the sustainable harvesting and trade of Caterpillar Fungus for local communities to safeguard the resources and generate revenue.

- In 2018, Uttarakhand Government declared Caterpillar Fungus as Non-timber forest product as per the Indian Forest Act, 1927, to address sustainable trade in the fungus and promote fair trade practices. The guidelines contained information on the collection and trading of the species for local communities with details on the permitted collection site, permission, registration, and stock declaration.

SECURING THE FUTURE

- Develop policies, guidelines and frameworks through the National Biodiversity Authority to promote the sustainable and traceable harvest from the source sites and equitable trade of the species while safeguarding the rights of local communities.

- The Caterpillar Fungus depends on the association of the animal and fungal components within the habitat where it grows. The overexploitation of the fungus severely impacts its biodiversity-rich habitat, making it and the other wildlife species within the area susceptible to exploitation and damage. Thus, initiating a monitoring program and building a conservation program for the species and its habitat is critical to maintaining its viable population in the wild.

- The illegal and unsustainable trade in caterpillar fungus and the legal trade within the country must be assessed so that proper mechanisms can be devised for traceable, sustainable and equitable trade while facilitating law enforcement agencies in making an informed decision on illegal trade.

- An evaluation of the status of the species in the range countries need to be undertaken to generate supporting data for proposing the listing of species on Annexes of the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES). This will help ensure that international trade in specimens does not threaten the species' survival.

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