

SUPPLEMENTARY TABLE S1. Spatial and temporal distribution of 13 lethal mushrooms causing poisoning incidents in China, 2019.

Mushroom species	Time of poisoning	Distribution (City, Province)	Remarks	References			
Acute liver failure							
<i>Amanita exitialis</i>	March 3, 2019	Shenzhen, Guangdong	<i>Amanita exitialis</i> , the most common lethal mushroom in Guangdong, is called the "Guangzhou Destroying Angel". It grows in broad-leaved forest, and often appears in Guangdong from March to May. Remarkably, it was first found in tropical Yunnan areas (Dehong, Baoshan, Puer, etc.) in June to July every year and usually grows in subtropical Yunnan areas (Chuxiong, Dali, etc.) in July to early August, occasionally even late to early October (Kunming). This species also caused an incident in Qiannan, Guizhou Province in early June 2017.	(6,8–9) and this study			
	March 7, 2019	Shenzhen, Guangdong					
	June 11, 2019	Dehong, Yunnan					
	June 20, 2019	Dehong, Yunnan					
	June 29, 2019	Baoshan, Yunnan					
	June 30, 2019	Dehong, Yunnan					
	July 13, 2019	Baoshan, Yunnan					
	July 28, 2019	Chuxiong, Yunnan					
	June 10, 2019	Xiangtan, Hunan			<i>Amanita fuliginea</i> , one of the most common lethal species in central China, is called "East Asian Brown Death Cap". It is recognized as the most dangerous species in Hunan Province in June. The species, widely distributed in Eastern, Central, (6,8–9) and this Southern, and Southwestern China (Anhui, Fujian, Guangdong, Hunan, Jiangxi, study Sichuan, Yunnan, and Zhejiang, etc.), grows in broad-leaved or mixed forests with Fagaceae and Pinaceae and appears from late spring, summer to autumn. Morphologically, <i>Amanita cf. fuliginea</i> is similar to <i>A. fuliginea</i> , but this species has distinctly larger basidiomata and different microstructures. Phylogenetic analyses also confirm it is different from <i>A. fuliginea</i> . Further studies are needed for its accurate identification and thus it is temporarily named as " <i>A. cf. fuliginea</i> " in this study.	This study	
June 11, 2019	Chenzhou, Hunan						
June 22, 2019	Changde, Hunan						
July 18, 2019	Hangzhou, Zhejiang						
June 26, 2019	Qiannan, Guizhou						
June 28, 2019	Qiannan, Guizhou						
June 26, 2019	Qiannan, Guizhou	<i>Amanita pallidorozea</i> is a common lethal mushroom distributed in northeastern, eastern, northwestern, central and southwestern China (Anhui, Gansu, Guizhou, Henan, Hubei, Jilin, Liaoning, Shaanxi, Shandong, and Yunnan). It is called "Pale-Rose Death Cap" because of its pale red pileus. This species grows in broad-leaved or mixed forests with Fagaceae and Pinaceae and appears from late June to mid-September.	(6,8–9) and this study				
July 10, 2019	Enshi, Hubei						
July 16, 2019	Bijie, Guizhou						
July 17, 2019	Zunyi, Guizhou						
July 8, 2019	Qiannan, Guizhou			<i>Amanita rimosa</i> , a common lethal mushroom distributed in eastern, central, southern, and southwestern China (Guangdong, Guizhou, Hainan, Hubei, Hunan, Jiangxi, and Zhejiang), is called "Splitting Death Cap". It is considered as one of the most dangerous species in Guizhou, Hunan, Hubei, and Zhejiang from June to July, where poisoning incidents caused by this species happened frequently. This species grows in broad-leaved or mixed forests with Fagaceae and Pinaceae and appears from mid-May to mid-September.	(6,8–9) and this study		
July 24, 2019	Shaoxing, Zhejiang						
August 21, 2019	Zibo, Shandong					<i>Amanita subjunquillea</i> , the most widely distributed lethal amanita in China including Anhui, Beijing, Gansu, Guizhou, Hebei, Henan, Hubei, Inner Mongolia, Jilin, Liaoning, Shaanxi, Shandong, Shanxi, and Yunnan, is called "East Asian Death Cap". It grows in broad-leaved forests dominated by Fagaceae and appears from July to mid-September.	(6,8–9) and this study

TABLE S1. (continued)

Mushroom species	Time of poisoning	Distribution (City, Province)	Remarks	References
<i>Amanita subpallidorozea</i>	October 16, 2019	Zunyi, Guizhou	<i>Amanita subpallidorozea</i> is only discovered from Guizhou, Hubei, Hunan, and Taiwan in China. It grows in broad-leaved forests dominated by Fagaceae and appears from September to early November. This species has become the first study mushroom killer in Guizhou Province from late autumn to early winter.	
	October 21, 2019	Zunyi, Guizhou		
	October 22, 2019	Zunyi, Guizhou		
	October 27, 2019	Zunyi, Guizhou		
	October 27, 2019	Zunyi, Guizhou		
	October 27, 2019	Zunyi, Guizhou		
	November 1, 2019	Zunyi, Guizhou		
	October 5, 2019	Chengdu, Sichuan		
	November 19, 2019	Zunyi, Guizhou		
	November 21, 2019	Enshi, Hubei		
December 6, 2019	Zunyi, Guizhou			
<i>Galerina sulciiceps</i>	April 30, 2019	Zhuzhou, Hunan	<i>Galerina sulciiceps</i> is the most common poisonous species from the genus <i>Galerina</i> in China. It is distributed in Central, Northern, and Southwestern China (Beijing, (6, 11) and this Guizhou, Hubei, Jiangxi, Sichuan, and Yunnan). This species grows on rotten wood study or even on sawdust and appears from late June to early December.	
	July 2, 2019	Shanghai		
	July 2, 2019	Zhejiang		
	July 16, 2019	Suzhou, Jiangsu		
	August 30, 2019	Shanxi		
<i>Lepiota brunneoincarnata</i>	July 14, 2019	Yongzhou, Hunan	<i>Lepiota brunneoincarnata</i> is the most common poisonous species from the genus <i>Lepiota</i> in China. It is widely distributed in Northeastern, Northern, Northwestern, Eastern, and Central China (Beijing, Gansu, Hebei, Hunan, Jiangsu, Jilin, Liaoning, Ningxia, Shandong, Shanghai, Shanxi, Xinjiang, and Zhejiang, etc.). Previously, this species is discovered only from temperate areas including Northeastern, Northern, and Northwestern China. Recent years, it also caused several poisoning incidents in subtropical areas, including several provinces of Eastern and Central China. Further studies are needed for its geographic expansion. <i>L. brunneoincarnata</i> grows in pine forest and appears from late April to early September.	
	July 16, 2019	Changsha, Hunan		
	July 17, 2019	Yongzhou, Hunan		
	July 22, 2019	Yongzhou, Hunan		
	August 6, 2019	Zhejiang		
	August 12, 2019	Miluo, Hunan		
	August 13, 2019	Huzhou, Zhejiang		
	August 16, 2019	Wenzhou, Zhejiang		
	August 18, 2019	Changsha, Hunan		
	August 19, 2019	Chongqing		
August 21, 2019	Baoshan, Yunnan			
August 22, 2019	Changde, Hunan			
August 23, 2019	Chongqing			
August 28, 2019	Nanping, Fujian			
September 1, 2019	Hangzhou, Zhejiang			
September 6, 2019	Huzhou, Zhejiang			
<i>Russula subnigricans</i>	July 14, 2019	Yongzhou, Hunan	<i>Russula subnigricans</i> is the most common poisonous mushroom leading to rhabdomyolysis in China. It is widely distributed in Northern, Eastern, Central, Southern, and Southwestern China (Chongqing, Fujian, Gansu, Guangdong, (6, 14) and this Guizhou, Hainan, Hunan, Jiangxi, Shandong, Taiwan, Yunnan, and Zhejiang, etc.). study This species grows in broad-leaved or mixed forests with Fagaceae and Pinaceae and appears from June to September.	
	July 16, 2019	Changsha, Hunan		
	July 17, 2019	Yongzhou, Hunan		
	July 22, 2019	Yongzhou, Hunan		
	August 6, 2019	Zhejiang		
	August 12, 2019	Miluo, Hunan		
	August 13, 2019	Huzhou, Zhejiang		
	August 16, 2019	Wenzhou, Zhejiang		
	August 18, 2019	Changsha, Hunan		
	August 19, 2019	Chongqing		
August 21, 2019	Baoshan, Yunnan			
August 22, 2019	Changde, Hunan			
August 23, 2019	Chongqing			
August 28, 2019	Nanping, Fujian			
September 1, 2019	Hangzhou, Zhejiang			
September 6, 2019	Huzhou, Zhejiang			

TABLE S1. (continued)

Mushroom species	Time of poisoning	Distribution (City, Province)	Remarks	References			
Acute renal failure							
<i>Amanita neoovoidea</i>	June 19, 2019	Dehong, Yunnan	<i>Amanita neoovoidea</i> , a common poisonous mushroom distributed in Eastern, Central, Southern, and Southwestern China (Anhui, Fujian, Guangdong, Guangxi, Hunan, Jiangxi, Sichuan, and Yunnan), is called "East Asian Egg Amidella". It is regarded as edible in Japan and some areas in Anhui Province, China. But in recent years, several poisoning incidents happened after eating this species and thus, it cannot be removed from poisonous mushroom list. This species grows in pine, broad-leaved, or mixed forests and appears from June to October.	(6,8-9) and this study			
	June 24, 2019	Guiyang, Guizhou					
	June 30, 2019	Guiyang, Guizhou					
	July 1, 2019	Changde, Hunan					
	July 2, 2019	Changde, Hunan					
	July 8, 2019	Yichang, Hubei					
<i>Amanita oberwinklerana</i>	July 9, 2019	Changde, Hunan	<i>Amanita oberwinklerana</i> , the most common poisonous mushroom causing acute renal failure in China, is called "Oberwinkler's Destroying Angel". It is distributed in Northeastern, Central, Eastern, Southern, and Southwestern China (Anhui, (6,8-9) and this Guangdong, Guizhou, Hainan, Hubei, Hunan, Jiangsu, Jilin, Taiwan, Yunnan, and study Zhejiang). This species grows in broad-leaved or mixed forests with Fagaceae and Pinaceae and appears from July to September.				
	July 11, 2019	Changde, Hunan					
	July 19, 2019	Huzhou, Zhejiang					
	<i>Amanita pseudoporphyria</i>	June 28, 2019			Changsha, Hunan	<i>Amanita pseudoporphyria</i> , the most widely distributed mushroom causing acute renal failure in China, is called "Hongo's False Death Cap". It is distributed in Northern, Central, Eastern, Southern, and Southwestern China from tropical, subtropical to temperate areas (Beijing, Fujian, Guangdong, Guangxi, Guizhou, study Hainan, Henan, Hunan, Jiangsu, Jiangxi, Sichuan, and Yunnan). This species grows in scattered pine, broad-leaved, or mixed forests with Fagaceae and Pinaceae and appears from June to September.	