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Analysis on Current Situations of Endangered *P. intermedius* S. Y. Chen

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Abstract We carried out a general survey of current situations of *P. intermedius* S. Y. Chen. Results show that *P. intermedius* S. Y. Chen is distributed in Dongkeng Township, Jingnan Township and Yanxi Township. It covers an area of 262.51 hm². The distribution areas are narrow and limited. What's worse, it suffers from serious destruction and has been withered in large areas. Besides, according to current introduction test, it is difficult to survive in other places. In accordance with *Exploring the Criteria for Endangered Categories of Bamboo Species from China* put forward by Ma Naixun *et al* from the Research Institute of Subtropical Forestry of Chinese Academy of Forestry (RISFCF), we propose incorporating *P. intermedius* S. Y. Chen into vulnerable species for protection.

Key words *P. intermedius* S. Y. Chen, Current situations, Analysis on endangered situations

P. intermedius S. Y. Chen, also called Lishi Bamboo, has tasty bamboo shoots. It is as high as 3 to 4 m with diameter 1 to 2 cm. New bamboo takes on green covered with white powder. At upper part of bamboo joint, there are small rough hairs which are not easily visible but vulnerable to fall off. Sheaths of bamboo shoots fall late and the length between joints is nearly equal. After rough hairs falling off, upper edge will become shriveled. It has slightly grown sheaths and lacks auricles. Sheath ligule is in concave or arc shape with height of 3 to 4 mm. Leaves of sheaths, like needle, open or overturn, and slightly roll towards backside. Leaves are generally 12 to 25 cm long and 25 to 32 cm wide. The bamboo-shoot sprouts from the late ten days of April. Bamboo poles are stiff and suitable for umbrella handle, but hard to split^[1]. As a rare species, *P. intermedius* S. Y. Chen is unique in Jingning She Autonomous County. Bamboo-shoot sprouts from the late ten days of April to the first and middle ten days of May. This bamboo shoot is fragrant and sweet, its lower part is more fresh and tender than upper part. Small bamboo shoots pickled in Dongkeng area of Jingning She Autonomous County are well received by town dwellers and citizens. Main materials of these pickled shoots are *P. intermedius* S. Y. Chen. Unfortunately, large area of bamboo grove is found withered in 1997^[2]. To enhance protection of *P. intermedius* S. Y. Chen, we carried out survey for this resource and here analyze its endangered situation.

1 Survey method

Through visiting, we got preliminary understanding of the distribution range of *P. intermedius* S. Y. Chen. According to

similarity of environment site, we expanded the survey areas. After knowing its distribution range, we surveyed its area, growth condition and elevation range of natural distribution area using sampling survey and topographic map plotting method.

2 Survey results

The *P. intermedius* S. Y. Chen is mainly distributed in Dongkeng Township, Jingnan Township and Yanxi Township of Jingning County, with an area of 262.51 hm² (shown in Table 1).

3 Criteria for judging endangering and analysis

3.1 Criteria for judging endangering According to *Exploring the Criteria for Endangered Categories of Bamboo Species from China* put forward by Ma Naixun *et al* from the Research Institute of Subtropical Forestry of Chinese Academy of Forestry, we selected the ecological amplitude, distribution range, population quantity, value of development and utilization, and endemic species to divide the protection of bamboo species in China into endangered, rare and vulnerable levels. Then, we analyzed endangered situations of *P. intermedius* S. Y. Chen.

3.1.1 Endangered bamboo species. This type of bamboo species is distributed in a narrow area with small ecological amplitude, the genetic feature is highly special and storage in strange place is hard to succeed under general technical conditions. Alternatively, among lots of types of bamboo species, this has important or unique economic, development and utilization value. Nevertheless, in recent two or three decades, resource damage is serious, its growth condition becomes extremely bad and the situation is worsening. Another case is autogenous that has important value or potential value in science and needs special protection^[3].

3.1.2 Rare species. The distribution range is narrow, by now, *P. intermedius* S. Y. Chen is found only in one county and district. In adjacent counties or districts, only little population has been found. Generally, the population area is less

than 20 hm² with serious artificial disturbance. Alternatively, it has certain economic and scientific value and should receive close attention^[3].

Table 1 Distribution of *P. intermedius* S. Y. Chen

Township	Village	Distribution points	Elevation m	Area hm ²	Main associated plants
Dongkeng	Makeng	4	640–830	1.73	Pine, China fir, oak, <i>Schima superba</i> , and azalea
	Zhubu	3	700–850	2.67	Pine, oak, Qinggang oak, <i>etc.</i>
	Hecun	2	600–840	7.00	Pine, oak, <i>Schima superba</i> , <i>etc.</i>
	Beishan	1	500–520	0.20	Oak, <i>Castanopsis sclerophylla</i> , azalea, <i>etc.</i>
	Baihe	3	530–800	6.40	Pine, oak, <i>P. tomentosa</i> , azalea, <i>etc.</i>
	Taoyuan	5	550–760	11.00	Pine, oak, <i>Schima superba</i> , <i>Alnus cremastogyne</i> , <i>etc.</i>
	Zhangkeng	2	500–650	8.00	Pine, China fir, bamboo, azalea, <i>etc.</i>
	Tangbei	1	610–690	2.00	Pine, China fir, oak, azalea, <i>Alnus cremastogyne</i> , <i>etc.</i>
	Dazhangkeng	3	750–1 000	3.33	Pine, China fir, oak, azalea, <i>Castanopsis sclerophylla</i> , <i>etc.</i>
	Wushantou	1	730–780	2.00	Pine, China fir, oak, azalea, <i>etc.</i>
	Gendixian	1	700–800	3.33	Pine, oak, <i>Castanopsis sclerophylla</i> , azalea, <i>etc.</i>
	Xulong	1	620–750	4.67	Pine, oak, <i>Castanopsis sclerophylla</i> , azalea, <i>etc.</i>
	Dongkeng	1	600–760	1.33	Pine, China fir, <i>Castanopsis sclerophylla</i> , azalea, <i>etc.</i>
	Jingnan	Dongtang	11	870–980	19.00
Zhongxi		5	900–940	7.33	Pine, China fir, <i>Castanopsis sclerophylla</i> , and azalea
Chengtian		11	650–850	16.53	Pine, China fir, <i>Castanopsis sclerophylla</i> , and azalea
Miaokeng		6	700–750	20.33	Pine, China fir, <i>Castanopsis sclerophylla</i> , azalea, and small bamboo
Yanxi	Huangtong	10	700–750	35.00	Pine, China fir, <i>Castanopsis sclerophylla</i> , and azalea
	Shiti	15	600–750	36.33	Pine, China fir, <i>Castanopsis sclerophylla</i> , azalea, and small bamboo
	Yanxi	14	520–600	41.33	Pine, China fir, <i>Castanopsis sclerophylla</i> , and <i>Schima superba</i>
	Dongshan	3	650–800	4.67	Pine, China fir, <i>Castanopsis sclerophylla</i> , <i>Schima superba</i> , and <i>Dicranopteris linearis</i>
	Meiniao	8	600–750	21.33	Pine, China fir, <i>Castanopsis sclerophylla</i> , <i>Schima superba</i> , and <i>Dicranopteris linearis</i>
	Zhewan	2	600–650	3.33	Pine, China fir, <i>Castanopsis sclerophylla</i> , and oak
	Daqutian	4	530–700	3.67	Pine, China fir, oak, <i>Alnus cremastogyne</i> and <i>P. tomentosa</i>

3.1.3 Vulnerable bamboo species. The distribution of this species is similar to rare species. Although there is large distribution in many districts and counties, the area is little and total area is less than 100 hm². This species has certain development and utilization value, but along with excessive development and ecological deterioration, it probably becomes the endangered species^[3].

3.2 Analysis on endangered situation The *P. intermedius* S. Y. Chen is mainly distributed in Dongkeng Township, Jingnan Township and Yanxi Township of Jingning County, with an area of 262.51 hm². Although it is larger than 100 hm², its distribution range is very narrow and large area of *P. intermedius* S. Y. Chen has once been withered. What's worse, in recent years, some of *P. intermedius* S. Y. Chen are found flower-

ing, and artificial destruction is serious. Besides, according to current introduction test, it is difficult to survive in other places. Therefore, we propose incorporating *P. intermedius* S. Y. Chen into vulnerable species for protection.

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