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Cover photo: *Cupressus jiangensis*, (synonym of *C. fallax*), shoot from type tree with immature seed cone, cultivated, Jiange Xian, Sichuan, China. In Chinese: Jiange Baimu.
Courtesy of Wang Dong, China. © Wang Dong.

About *Cupressus jiangensis* N.Zhao

The Jiange Cypress is a taxon described in 1980 by N. Zhao (Zhao 1980: 210).

According to Zhao, the type is kept in the SCFI herbarium in Chengdu, Sichuan, but none of our attempts to obtain a photograph or confirmation of its presence have been successful. We have access to an isotype specimen PE00002531 that Zhao had deposited at the PE herbarium in Beijing. The indicated place of collection is: “Sichuan, Jiange Xian, Hanyang, alt. 840 m. Collection *L.S.Cai* & *T.Z.Min* 101-104 (June 21, 1978).”

Note about the type

The collection date of 21 June 1978 is that given by Zhao in the protologue. On the specimen PE00002531, a label indicates the collection date of 21 September 1978, but in view of the two other previous dates appearing on this sheet, “September” is certainly wrong. Indeed, the Zhao label is dated 24 June 1978 and the determination of W.C.Cheng is 30 August 1978. In addition, the writing giving the wrong date is not the same as the one on the field label attached to the branch. It is possible to deduce that the “9” for September is certainly a recopy error posterior to the collection. A June collection date means that the cones on the type specimen are not fully mature.

Note on etymology

The name *jiangensis* derives from the name of the district where the type specimen was collected, namely 剑阁, which in Pinyin is written “Jiàn gé” (contracted in Jiange). However, we often find this taxon spelled *jiangensis* (*The plant list*, *World checklist*). These two lists are based exclusively on Farjon's (1999, 2010) publications. The “e” deleted from Jiange would suggest, wrongly, that this taxon originated from a place named “Jiang”. In an exchange of letters (dated 2019-12-19), Farjon explained that he had certainly been misled by the strikethrough “e” on the Zhao label on the PE isotype. He specifies that this is the only reason and that no nomenclature rule could justify its removal. Farjon concluded by saying that “the epithet *jiangensis* of the protologue must prevail.” The cause of the error having been established, it is therefore necessary to make the corrections and to respect the spelling of the protologue by writing *jiangensis* to designate the Jiange Cypress (cf. ipni.org).

The author's name can be in two standard forms: N.Chao or N.Zhao (cf. ipni.org). The two names denote the same person: 赵能 Zhào Néng.

Original description of the *Cupressus jiangensis* by Zhao¹

“Large evergreen tree, 27 m high, trunk 17.7 m high, 1.16 m in diameter. Leafy twig with tight scales, compressed cylindrical, not hanging, about 1 mm in diameter at the apex. Leaves in the form of scales, ovoid, green, 1.2 mm long, non-pruinose, blunt or pointed tip, convex on the dorsal side, with a distinct gland.

Cones, solitary, terminal, ripening in the second year, pruinose, ovoid-oblong, 1.7 cm long and 1.2 cm in diameter; 6 pairs of scales, which are peltate, woody, valvate, with a moderately acuminate flattened apex, 1 mm long by 1.5 to 2 mm wide; seeds 6 under each fertile scales, yellowish-brown, flattened, irregularly broad ovoid, about 3.5 mm long, narrowly winged on each side.”

Silba

One year after the publication of Zhao, Silba reduced the taxon as a variety: *C. chengiana* var. *jiangensis* (N.Zhao) Silba (Silba 1981: 394). But in 1982, Silba reduced the taxon to synonymy with *C. chengiana*. Here are his reasons:

In Phytologia 49: 395. 1981 there is a photograph of the type tree of *Cupressus jiangensis* Zhao surrounded by trees of *Chamaecyparis funebris* at Jiange Xian, Huaying Shan, Sichuan (30°24'N by 107°20'E.) It seems rather odd that *Cupressus jiangensis* is only represented in the wild by one individual tree in the middle of forest of another unrelated species. Rather, it seems more logical that the lone specimen of *Cupressus jiangensis* in Huaying Shan is actually a specimen of *Cupressus chengiana* that was introduced by bird, or man. Zhao (1980) distinguishes *Cupressus*

¹ Translation from Latin.

jiangeensis from *Cupressus chengiana* by it having an ovoid cone with 12 scales, whereas the latter has globose cones with 8-10 scales. However, *Cupressus chengiana* S.Y. Hu, H. Smith 13387 (NY) from Kangding has both globose and ovoid cones with 8-12 scales. The description of *Cupressus jiangeensis* N. Zhao (1980) seems to fit well in the characters of *Cupressus chengiana* and is here reduced to synonymy with it. (Silba 1982 : 158).

The geographic coordinates indicated by Silba in this text are incorrect; they point far outside the Jiange district (Xian). The locality of Huaying Shan is also inaccurate. To argue its synonymy, Silba (1982) indicates a *Cupressus* collected near the city of Kangding, *H. Smith 13387* from the New York herbarium. This specimen has cones of 8 to 12 scales, which we have verified. Note that at this period *C. chengiana* in the concept of Silba meant *C. fallax* (Wilson 2106 - see *C. chengiana* var. *wenchuanshiensis* below.)

Location

Extensive research and correspondence with Chinese and Western researchers who have visited the site confirm that *C. jiangeensis* is indeed a unique specimen, planted several centuries ago. According to the information on the label of the isotype, the tree is well located in the county of Hanyang (Zhen), district of Jiange (Xian) at 840 m above sea level. We have located it more precisely in a place called 翠云廊, Cui yún láng, Cuiyun Gallery, “Cuiyun Corridor”. It is the name given to a section of the old road that linked Sichuan to Shaanxi. The old road which crosses the county of Hanyang is bordered by thousands of very old *C. funebris* Endl. which form an avenue. One legend says that one summer day, when the army was overwhelmed by the heat, General Zhang Fei (167-221 AD) ordered thousands of trees to be planted to provide shade on this route. Another legend says that these trees were planted 2,300 years ago during the reign of Ying Si, king of Qin, 337 to 311 BC. However, the actual date of these plantations is not known with any precision.

A map of the place locates the only Jiange Cypress 3.75 km northeast of downtown Hanyang, about 32°09'12.1"N, 105°32'20"E. The coordinates are those obtained from a local map super-imposed on Google Earth: a margin of error of a few tens of metres is therefore to be expected.

Farjon (2005, 2016) locates *C. jiangeensis* in Sichuan, Longmen Shan, but this mountain range is situated further west and not in Hanyang County. Therefore, the locality of Longmen Shan is incorrect.

Change of IUCN status

The current [IUCN status](#) (version 3.1) of “*C. chengiana* var. *jiangeensis*” is “Critically Endangered”, criterion D: less than 50 mature specimens. The classification in this category suggests that this unique individual is considered a tree of wild origin in its natural range. As we have just seen, the lonely Jiange Cypress is a tree planted by humans far away from any natural range of the species. Therefore, as long as this taxon is maintained separately by IUCN – be it at the variety or species rank – its status must change to “**Extinct in the Wild**”.

Silba's reversal

In 1986, a study by H.Jiang & L.Wang would revive the debate (Jiang & Wang 1986: 259). These authors observe differences in peroxidase isoenzymes in their *C. jiangeensis* sample. But the material that these authors studied was collected from cultivated trees, which was provided to them by the Forestry Bureau of Mianyang Shi, Sichuan. The results thus obtained do not therefore concern the enzymes of the type *C. jiangeensis*, but those of one of its offspring grown from its seeds.

Referring to the work of Jiang & Wang (1986), Silba returned to his relevant previous observations and rehabilitated his *C. chengiana* var. *jiangeensis* (Silba 1990: 28). Note that this reversal coincided with the year in which Silba received seeds from L.C.Wang (Northwest Normal University, Lanzhou, Gansu). In 2005 Silba changed the rank from variety to subspecies.

The introduction of the “Jiange Bai” in culture

Indeed, in 1990, Silba obtained viable seeds harvested from the type *C. jiangeensis*, collection Wang 026, as well as other batches of seeds from Gansu, Wang 027 and Sichuan, Wang 028 (Min

river basin). Plants grown from *Wang 026* seeds represent currently the only living material available in the West from the *C. jiangensis* type tree. They are very rare in culture; only five direct individuals have been identified. They are not to be confused with *C. chengiana* from *Wang 028* seeds, which had initially been mistakenly distributed by Silba as *C. chengiana* var. *jiangensis* and which are, for the most part, still cultivated under this name (RBGE, Eastnor Castle, Bickton Park, etc.). Original cultivated trees from the *Wang 026* seeds can be found in Rushforth's private collection in England, and also in Fort Bragg, Mendocino Coast Botanical Garden and Santa Cruz SC-UC Arboretum, in California, USA.

A genetic analysis (Rushforth *et al.* 2003) includes material taken from plants from the three different sources of Wang seeds. The results are surprising:

“Cupressus jiangensis has been recognized (Farjon, 1998) as a variety (C. chengiana var. jiangensis (N. Zhao) Silba), so its association with the C. chengiana group was expected. However, it is so distinctive that support for specific recognition is strengthened by the analysis.”

According to Rushforth (*pers. comm.* 2019), his two plants (clone A and B) from *Wang 026* that were used for this study have affinities with *C. funebris*. On the other hand, Rushforth (*pers. comm.*) specifies that the geographic origin in Chinese of the batch of seeds *Wang 028* had initially been badly translated by Silba and that the latter had written correcting the name. Silba indicates that only *Wang 026* seeds are from *C. jiangensis* and that *Wang 028* seeds are from *C. chengiana*. This last point is effectively confirmed by the results of the study (Rushforth *et al.* 2003, see Fig. 3 below for the cladogram).

It therefore seems possible and even likely that the seeds collected from the solitary *C. jiangensis* may, in part or in totality, have been fertilised by the hundreds of *C. funebris* that surround it. The affinity with *C. funebris* observed by Rushforth on his plants ex *Wang 026* in culture is therefore to be expected in the other cultivated trees resulting from these sowings, but has to be verified.

The work of Xu *et al.*

The work carried out by Xu *et al.* (2010) is, for once, based on reliable material. The collector, Prof. Jianquan Liu, confirmed that the sample that served as a reference for *C. jiangensis* (JQ Liu 2732) was taken directly on the type tree (*pers. comm.*). Therefore, the results of the work of Xu *et al.* are indisputable and they conclude that the chloroplast genome of the typical *C. jiangensis* is very closely related to one of the Sichuan cypresses. In other words, it means that *C. jiangensis* is synonymous either with *C. chengiana* or *C. fallax* Franco. Prof. Liu states (*pers. com.*): “According to our field research as well as numerous genetic studies, *Cupressus jiangensis* is not a distinct species”.

The taxonomic criterion of the cone

C.T.Kuan (1983: 166) published the variety *C. chengiana* var. *jiangensis* (N.Chao) C.T.Kuan. This combination with a single “e” is sometimes confused with that of Silba, but it is illegitimate because the type (Cai & Min 101-104) is not designated.

C.T. Kuan reports other “*Cupressus jiangensis*” in the Xiaojin district, Muya Qiao at an altitude of 2800 m. These indications correspond to *C. chengiana*², collection Zhang & Ren 5852 (1958-07-09). Other specimens from Kangding, collection Sichuan plant team 05325 have also been confused with *C. jiangensis* by L.K. Fu in 1987. The oldest *C. chengiana*² in culture at INRA in Antibes, France, from seeds sent by Dr. Pan Zhigang *s.n.* in 1981, also comes from Kangding (see



Fig. 1: Sample collected on the *C. jiangensis* type tree showing a mature seed cone identical with those of *C. fallax*: 12 cone scales, size and shape. Courtesy of Mr Wang Dong.

² Now *C. fallax*.

Fig. 1, p. 61). It has cones with rarely 8 scales, generally 10, and often 12 (circa 25-30%) and some cones with 14 scales have even been observed (F. Bauny, *pers. comm.*).

A very significant study on the variation of cones of the Gansu-Sichuan cypresses was carried out (Feng *et al.* 2017). This work concerns eleven wild populations representing the whole area in the three river basins. Random samples of 5 cones were taken from 220 healthy trees. The results of this study are therefore very representative. One of the most interesting characters here is the number of scales per cone. The study by Feng *et al.* demonstrates that the *C. fallax* populations located in the Dadu He basin in Sichuan (Jinchuan, Xiaojin, Kangding and Danba districts) have on average a number of scales per cone equal or greater than 10. This implies that part of the cones have 12 scales or more. It therefore becomes obvious that the number of seed cone scales of *C. jiangensis* falls within the normal cone variability of *C. fallax*. The oblong shape of the cone also confirms that the *C. jiangensis* cultivated tree comes from the west Sichuan. Therefore it is here reduced to synonymy of *C. fallax*.

Taxonomic treatment:

Cupressus fallax Franco, emended Maerki & J.Hoch (2020).

Holotype: *Wilson 2106* (BM), Dadu He valley, alt. 1300-2600 m, Jun.-Aug. 1908.

Synonyms: *Cupressus jiangensis* N.Zhao, 1980.

Cupressus chengiana var. *jiangensis* (N.Zhao) Silba, 1981.

Cupressus chengiana subsp. *jiangensis* (N.Zhao) Silba, 2005.

Type: *Cai & Min 101-104* (holotype?, isotype: PE), cultivated, Hanyangzhen Jiange Xian, Sichuan, China, alt. 840 m.

More confusion

It remains to elucidate the divergent genetic results obtained by an American researcher. The observations on *C. jiangensis* in the work of Little (2005, 2006) and Little *et al.* (2011) are based on the specimen *Little & Sun 869* which according to D.P. Little would also come from the type tree. However, Little indicates that:

“*Cupressus jiangensis* [that is to say *Little & Sun 869*] shares many morphological similarities with *Cu. Chengiana* and *Cu. funebris*, leading to suggestions that *Cu. jiangensis* [that is to say *Little & Sun 869*] is morphologically intermediate between the two species and possibly of hybrid origin.” (Little 2006: 472.)

However, the results of Xu *et al.* 2010 demonstrate that the type tree is a not a hybrid. Such different results imply that one of the two specimens – *Little & Sun 869* or *JQ Liu 2732* – does not come directly from the *C. jiangensis* type tree.

If the type tree is itself a hybrid, then where does *JQ Liu 2732* come from? There is no other old cypress with monomorphic leaves around the Jiange Cypress with which it could have been confused. It is true that the geolocation of *JQ Liu 2732* (32°01'N, 105°28'E) and the altitude (535 m) do not correspond exactly. These coordinates point right in the middle of a cultivated field at an altitude of 650 m. It thus cannot be the place of collection of this specimen. Given the locations of other Jianquan Liu specimens (Xu *et al.* 2010), it can be seen that they were obtained approximately from maps. Nothing can be deduced from this erroneous location, other than assuming that this collector had neither a GPS nor an altimeter at his disposal. How to explain the contradictory results? The oblong cones with 12 scales and the monomorphic leaves of the *C. jiangensis* type (*Cai & Min 101-104*) do not at all argue in favour of the intermediate character of a hybrid between *C. fallax* and *C. funebris*. On the other hand, none of the botanists who have directly studied the typical herbarium specimen or its isotype duplicate (*Cai & Min 101-104*) have alluded to a hybrid or to characters of *C. funebris*. Little has not seen the type herbarium specimens (*Cai & Min 101-104*), but confirms that the *Little & Sun 869* specimen is a material from the type tree (*pers. comm.*). However, he does not expressly mention this essential information in his three articles, or even on his specimen. The question that can therefore be asked is: does it come directly or indirectly from the type tree? Indeed, Little writes:

[“The tree on which the type specimen \[Cai & Min 101-104\] had been collected is protected by the Chinese government. There are additional live specimens \(produced from cuttings and seeds\) planted near the original tree.”](#) (Little 2005: 258.)

Had he obtained the authorisation of the Chinese government to climb in the crown, perched at more than 17 m high, of the old protected tree (see Figs 7 & 8, p. 22), or did he have to content himself with taking from a specimen from cuttings planted nearby? A cutting can indeed be described as “material that comes from the type tree” since it is a clone of it. If that's the case, then it was for good reason that Little thought he had collected original material. Alas, in view of the results obtained with this specimen (*Little & Sun* 869), we must note that the alleged cutting (clone) was very probably a hybrid plant derived from seeds from the type tree.

According to Prof. Mao Kangshan and to Prof. Wang Li (*pers. comm.*):

[“There are no known successful cases of vegetative reproduction of *Cupressus jiangensis*.”](#)

And according to Prof. Mao Kangshan (*pers. comm.*):

[“The hybridization of trees from its seeds has been clearly observed on several occasions.”](#)

A journalistic field survey (West China Metropolis Daily 1985, revised in 2016) on the Jiange Cypress, tells us that as early as 1978, sowing had been carried out from seeds harvested from the old *C. jiangensis*. After several successive failures, it was finally in 1980 that the first viable plants were obtained. Local *C. funebris* seedlings were used to compare the two. Foresters have observed comparatively much more vigorous growth in young plants from the seeds of the old Jiange Bai. Which again points in direction of a hybrid vigour. In the article, it is only a question of sowing and that: “the plants obtained hardly differ from ordinary cypresses” (i.e. *C. funebris*) to conclude that the tree was condemned to live alone. Xiao Mingyuan, author of the article, had also titled it: “Why is there only one Jiange Cypress in the world?”

We have found no proof of the existence of clones of the old tree of *C. jiangensis* and in view of what has just been discussed, we conclude that the *Little & Sun* 869 material does not come directly, nor indirectly from the type tree, but from a hybrid tree derived from seeds from the type tree.

Several Chinese websites talk about new attempts to save the old Jiange tree. In September 2017, Wang Li, professor at the School of Life Sciences at Sichuan University, rerun research on the multiplication of *C. jiangensis* by experimenting with three methods: cuttings, sowing and in vitro tissue culture, but (*pers. comm.*): “the current results are not satisfactory”. According to the latest news (December 2019), grafting attempts will be tested in 2020.

Several Chinese genetic studies based on authentic material collected from the type *C. jiangensis* conclude that this taxon is not a distinct species of *C. chengiana*³.

³ Now *C. fallax*.

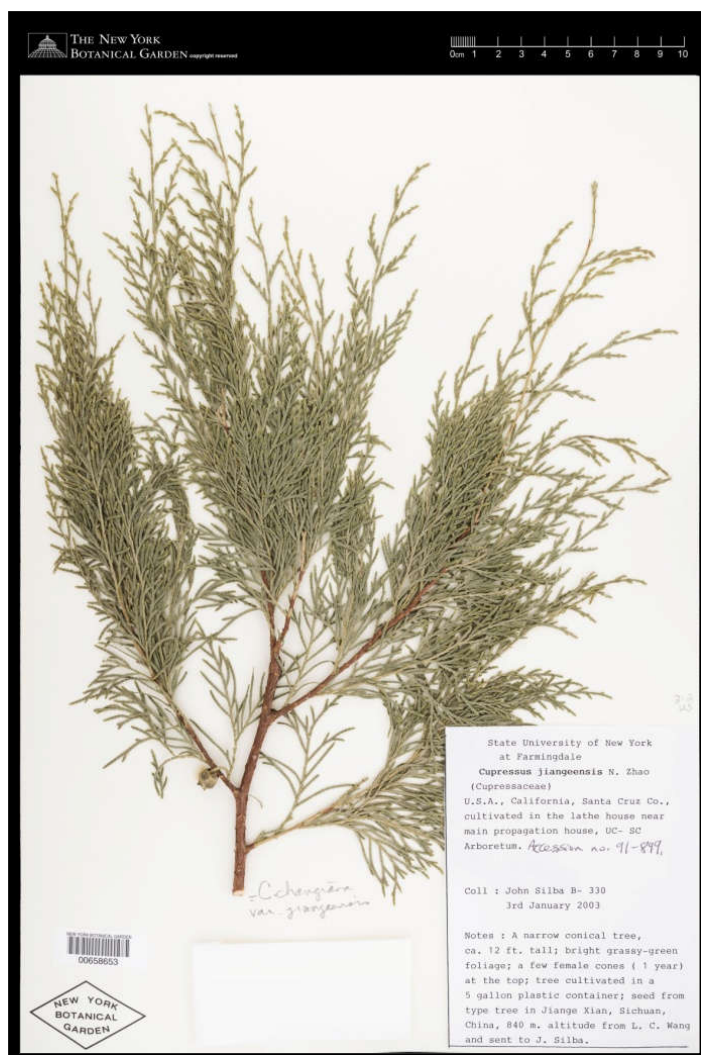


Fig. 2: Holotype of *C. ×wangii*, [NY00658653](#);
© Image courtesy of the [C.V.Starr Virtual Herbarium](#)
of The New York Botanical Garden.

However, its H5 haplotype (Xu *et al.* 2010) must still be found among the populations of the Dadu He and its tributaries in Sichuan so as to trace its wild origin more precisely. Genetic research on this subject is in progress (Mao *et al.*, in preparation).

All the observations made on plants derived from seeds harvested from the *C. jiangensis* type tree show that its seeds are the product of hybridisation between this tree and the numerous *C. funebris* that surround it. Consequently, a new hybrid *C. fallax* ♀ × *C. funebris* ♂ is described here. It is dedicated to Professor L.C. Wang (Northwest Normal University, Lanzhou, Gansu, China) in thanks for his contribution with sending the seeds of this hybrid in 1990.

Taxonomic treatment:

Cupressus ×*wangii* J.Hoch, Maerki & Rushforth, *nothosp. nov.*

Holotype: *Silba B-330* ([NY00658653](#)); cultivated from seeds of the type tree of *C. jiangensis*, ex *L.C. Wang 026* (1990); SC-UC Arboretum, Santa Cruz Co., California, USA (accession 91-899); 2003-01-03.

Description: Foliage disposed in flat sprays; the leaves are clearly dimorphic, showing more affinities with *C. funebris* than with *C. fallax*. The seed cone is rounded with small umbos and is quite different from the mother tree (cf. Fig. 1 above). The seed cone on the type herbarium sheet is just less than one year old and measure less than 1 cm in length and in width. The smaller than expected size of the seed cone can be explained by the absence of fertilisation for a pot plant kept inside a greenhouse. Sterile seeds do not develop to their normal size.

The variability of the other hybrid specimens is unknown, especially those (specimens A and B) used by Rushforth (ex *Wang 026* seed collection) (2003). This material in part or in totality was used for two different molecular analyses. The RPDAs analysis shows that *Cupressus* ×*wangii* is intermediate between *C. fallax* and *C. funebris* (Fig. 3).

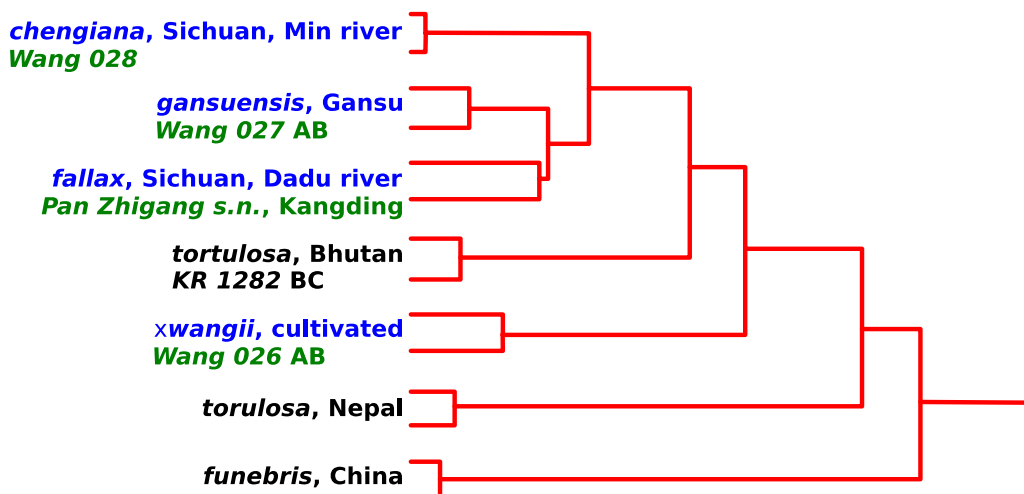


Fig. 3: Minimum spanning network, 329 RAPD bands. In green: origin of the material; in blue: species updated according to the present study and to Maerki & Hoch (2020: 3, Fig. 1). (About *tortulosa*, KR 1282, cf. p. 68-69 & 72.)

This result was confirmed by Terry *et al.* (2018) using nuclear sequences analysis (see Fig. 4).



Fig. 4: Cladogram showing the relationships of this group of cypresses using nuclear sequences. (Simplified to display only the renamed taxa discussed here and *C. funebris*, from Terry *et al.* 2018: 1190, Fig. 2). *Cupressus* ×*wangii* is clearly intermediate between *C. funebris* and the Sichuan-Gansu cypresses.

Moreover the same study analysed the chloroplasts of different Chinese species and of the specimen A from Rushforth. The chloroplast in conifers is paternally inherited, that is from the pollen. The result shows distinctly that the chloroplast of Rushforth's specimen A clusters close to *C. funebris* and away from *C. chengiana/fallax*, pointing definitively to the hybrid origin of the material under analysis and resulting from seeds collected on the *C. jiangensis* cultivated tree (Fig. 5).

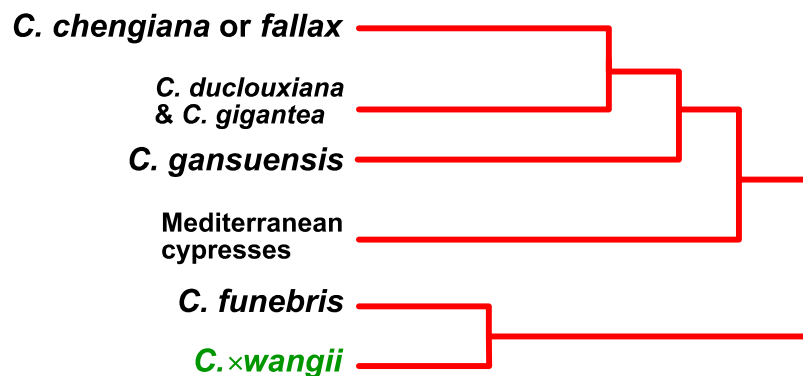


Fig. 5: Cladogram showing the relationships of this group of cypresses using chloroplast DNA. (Simplified to display mainly the renamed taxa discussed here and *C. funebris*, after Terry *et al.* 2018: 1190, Fig. 3). *Cupressus xwangii* is here clustering far away from the Sichuan-Gansu cypresses, but tightly with *C. funebris*, implying that the chloroplast DNA was inherited from that species and not from the cultivated tree once described under *C. jiangensis*.

Conclusion

There is no confirmed cultivated *C. jiangensis* in the West. Trees from *Wang 026* seeds are *C. xwangii*. Those from *Wang 027* seeds are *C. gansuensis* and those from *Wang 028* seeds are *C. chengiana*. The cultivated solitary *C. jiangensis* N.Zhao in Jiange County is a synonym of *C. fallax* Franco. There is only one herbarium sheet currently available (in Beijing herbarium, [PE00002531](#)). The fact remains that the venerable *C. jiangensis* in Jiange is undoubtedly the dean of its species and that it has an H5 haplotype (Xu *et al.* 2010) which has not yet been detected among the native populations. In this respect the several centuries old tree merits protection to the highest degree.

Acknowledgments & Bibliography cf. p. 36-37.

Fig. 6: *C. jiangensis*, type tree. Base of the trunk with the red ribbon. The ground has been covered to prevent roots being trampled on and damaged. The question is will not the roots suffer over time from such cover.



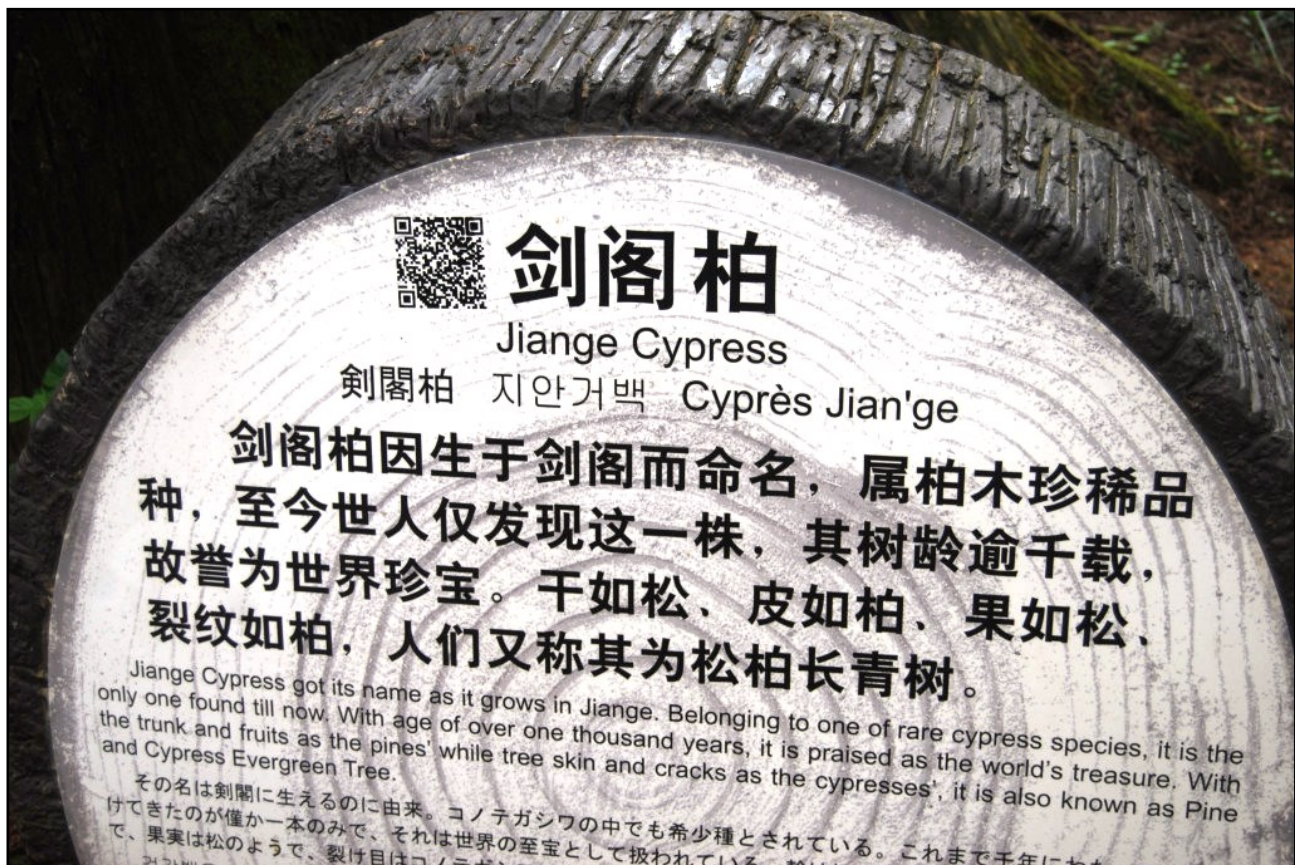


Fig. 7: The crown of the Jiange Cypress (right) has been fixed with cables to prevent its break-up. On the foreground: *C. funebris*.



Fig. 8: View on the twisted bark and the remaining foliage at 17 m height.

Fig. 9: Jiange Cypress presentation stele for the numerous visitors and tourists.



Historical and biogeographic review of the endemic cypresses of Sichuan and Gansu¹

Introduction

The most complete possible compilation of herbarium specimens and of the literature concerning cypresses previously listed as *Cupressus chengiana* S.Y.Hu or affiliated to it, which are endemic trees in China, was carried out. The type localities of five described and two unpublished names have been located: *C. chengiana* S.Y. Hu, *C. chengiana* var. *wenchuanhsiensis* Silba, *C. fallax* Franco, *C. chengiana* var. *kansuensis* Silba, *C. jiangensis* N. Zhao, *C. kansuensis* Cheng and *C. microcephala* Hao (unpublished). *C. teretus* Law, *nomen nudum*, is also mentioned. A new species *C. gansuensis* was distinguished in Gansu in a previous article (Maerki & Hoch 2020). Two distribution ranges were distinguished in Sichuan, attributed to two different species.

The primary objective of this research is to understand as precisely as possible the distribution area of these cypresses and to study the biogeographical relationships that exist between the different populations. The collection localities presented on the herbarium labels have been translated, updated and located as precisely as possible, enabling the production of new maps where all available data are plotted. This study highlights the geographic relationships and separations of several populations. Thus the existence of three areas, strictly segregated in three different watersheds, was determined:

- two are in Sichuan province: the Min (Jiang) river basin and the Dadu (He) river basin;
- a third is in the south of Gansu province: the Bailong (Jiang) river basin.

About 250 verified specimens representing c. 100 different collections have been found in herbaria around the world, representing over 100 years of acquisitions. The oldest, *Wilson 3012*, dates from 1904. Some numbers come from the same places. Others do not have indications precise enough to make it possible to locate them accurately on a map. The trees represented by the specimens may have disappeared today or may have been cultivated trees, which usually it is not possible to verify. In the deep valleys of Sichuan and rural Gansu there were no garden centres offering exotic plants for sale, so that the cultivated trees would be exclusively plants taken locally from the wild by the local populations with the aim to grow them for personal use, as trees in the wild may be cut by someone else. Thus by cultivating it, one family would be certain to be able to exploit its highly prized wood. Trees grown in the past in rural areas should therefore not be completely discarded, as they represent good indicators of the local presence of the species. The objective was to reveal the area of occupation of these cypresses, so all signs of presence within the natural area have therefore been taken into account. However when the tree is suspected of being cultivated it will be indicated in the specimen list (cf. Appendix A, p. 45). Collection dates are also not always significant: an old specimen can be a tree that is still alive, while a more recent specimen can come from a tree that has disappeared today. Therefore specimens are not distinguished according to their collection date.

These cypresses are intimately linked to the deep valleys of the mountains of central Sichuan and southern Gansu. The flanks and bottoms of the valleys they occupy are also the places inhabited by the people who appreciate them for their high quality wood. They have often been cultivated near villages, by the roadside, or near temples and this happened certainly over a lengthy period. When dealing with such a species that has been appreciated by man for so long, it becomes hazardous to distinguish the really wild stations from the stations where it has been able to naturalise. Human action has certainly contributed significantly to the distribution of the species within its range. The specimens collected often come from the main axes of circulation. Few explorers ventured outside the main communication routes and few specimens originate from very remote places. The results of this research must therefore be tempered by these remarks. In other words, it can be said that the specimens from the bottoms of dead-end valleys and those furthest away from the main roads are certainly potentially the wildest stations. The maps produced represent what is possible to extract from the information on the labels of herbarium specimens (cf. Appendix A), literature (see bibliography, p. 36) and some observations in the field. They do not reflect the current situation, but are a directory of all the information available from about a hundred years of botanical research. Some localities mentioned have since been destroyed by urbanisation, the construction of dams, roads, the exploitation of gravel pits or any other causes due to human activities. On the other hand, it is also likely that unlisted stations exist in other places not explored by botanists.

¹ In these two Chinese provinces there are two other *Cupressus* species, but they are not endemic: *C. duclouxiana* is present only in south-west Sichuan and *C. funebris* is widely cultivated.

The nomenclature history of the endemic Sichuan and Gansu cypresses

E.H.Wilson is the first botanist to mention these cypresses. He had collected samples both in the Dadu He basin (Kangding and Danba districts) and in the Min Jiang basin (Wenchuan and Mao Xian - see the specimen list in Appendix A). Wilson and his colleague A.Rehder first considered this Sichuan material to be identical to the Himalayan Cypress, *C. torulosa* (Sargent 1914: 54). But in 1926, Wilson changed his mind and renamed all those collections as *C. duclouxiana* (Wilson 1926: 61): “Since 1914 I have had the advantage of seeing many trees of the real *C. torulosa* D.Don cultivated in different parts of the world, and now realize that my colleague and I were in error in referring my Chinese material to the Himalayan Cypress. M. Hickel’s Chinese species [*C. duclouxiana* Hickel in Camus] is very distinct and may easily be recognized by its very slender branchlets and large globose and sub-globose cones usually 2-2.5 cm in diam.; occasionally they are less than 1 cm. long and broad, but is very unusual.”² It is worth noticing that the author incorporated a new specimen, Meyer 1981, which originates from the Bailong Jiang valley in southern Gansu. Rehder and Wilson added a second specimen, J.F.Rock 12073, also from southern Gansu to their concept of that species (Rehder & Wilson 1928: 17).

Cupressus duclouxiana was previously known only in Yunnan province. According to Rehder and Wilson, this species therefore extended much further north in the basins of the Dadu He and Min Jiang in Sichuan and up to the basin of the Bailong Jiang in South Gansu. From now on to facilitate the understanding, these “new *C. duclouxiana*” will be designated by “the cypresses of the three basins”.

From 1930, new collections in China enriched the herbarium specimens. The great majority of botanists had then adopted the nomenclature and the concept of Rehder and Wilson. With a few rare exceptions³, all the specimens collected in the three basins were systematically determined as *C. duclouxiana* and this remained the case until the early 1960s, sometimes into the 1970s.

In 1964, a new species from the Min Jiang basin, based on Cheng 2066, *C. chengiana* S.Y.Hu was described, and in 1969, another new *Cupressus* name was published, *C. fallax* Franco, but this name was soon widely relegated to a synonym of *C. chengiana* (see below for the type localities).

S.Y.Hu had intentionally restricted her *C. chengiana* to the Min Jiang basin alone. Franco’s circumscription was much broader. Like Hu, he kept *C. duclouxiana* in Yunnan only. But unlike her, he clearly intended to substitute his *C. fallax* for the supposed “*C. duclouxiana*” of all the three basins. The idea of a single new species found in the three basins was partly taken up by W.C.Cheng & L.K.Fu (*Flora of China* 1978) under the name of *C. chengiana*. The authors located *C. chengiana* as follows: “It is distributed in western and northern Sichuan (Maoxian, Wenchuan, Lixian, “Dajin” [Jinchuan], Xiaojin in the upper reaches of the Min Jiang River ^[4]), in the south of Gansu (Zhouqu, Shimen, Wudu), etc. It lives on dry and sunny slopes at an altitude of 1,200 to 2,900 meters. Type specimens were collected at Wenchuan, Sichuan.”⁵ The locality of Kangding, in the lower basin of the Dadu He is not mentioned, which, on this point, differs from the concept of *C. fallax* by Franco. It seems that L.K.Fu had some doubts about the taxonomic position of the Kangding cypresses. Indeed this author in 1985 determined as *C. chengiana* var. *jiangeensis* specimens from this district (CDBI0009138, CDBI0009139, CDBI0009168). This taxon with oblong cones and 10-12 scales was first described from NE Sichuan (Jiange Xian) as a full-fledged

² This last sentence concerns the specimens that Wilson collected in the Min Jiang valley, that is the taxon which will become *C. chengiana*.

³ The exceptions are: specimens Cheng 2066, first determined as *C. funebris* by Cheng because of its very small cones (see the paragraph on the *C. chengiana* type, p. 27). The names *C. microcephala* Hao and *C. kansuensis* Cheng on herbarium sheets, both unpublished (see p. 28 and p. 31 respectively). *C. teretus* Law, *nom. nud.*, has been proposed early to distinguish the cypresses from Gansu. (see p. 32).

⁴ The sentence “in the upper reaches of the Min Jiang” is ambiguous, because two of the five indicated districts, Jinchuan and Xiaojin, are located in the upper reaches of the Dadu He.

⁵ Translated from Chinese by JH & Li Shurong:

产于四川西部、北部（岷江上游茂县、汶川、理县、大金、小金）及甘肃南部（舟曲、石门、武都）等地，生于海拔1200-2900米干燥阳坡。模式标本采自四川汶川。

species by N. Zhao in 1980 and then reduced to the rank of a variety of *C. chengiana* by Silba in 1981 (see above p. 15).

Cheng & Fu (1978) justified the extension of the *C. chengiana* species to the other basins as follows: “S.Y.Hu established this species in 1964 on the basis of four specimens from north-west Sichuan [Min Jiang basin], she correctly distinguished this species from “dry cypress” [*C. duclouxiana*]. But due to the limited number of specimens she saw, her understanding of this species is not complete. On one hand, she rightly pointed out that the branchlets of this species are cylindrical, similar to *C. torulosa* D. Don. On the other hand, she stated that the cones of this species [*C. chengiana*] are only 0.5 to 1 cm in diameter. In fact, the diameter of the cones is mostly 1.2 to 2 cm, unless the abnormally developed cones or immature cones are small.”⁶

However, S.Y.Hu had actually seen a much wider range of specimens than Cheng & Fu claimed. In her article (1964: 57-58), she listed – in addition to the four specimens she designated as *C. chengiana* – eight other specimens from (or supposed to be from) the other two basins (Dadu He and Bailong Jiang). She had deliberately dismissed them under *C. torulosa* because of their larger cones or their different geographic origin.

In the Chinese herbaria, the nomenclature change of the “*C. duclouxiana* of the three basins” to *C. chengiana* started as early as the 1970s, when the botanists, C.D.Chu (Zhu Zhengde), L.K.Fu (Fu Ligu) and C.C.Yang (Yang Qinzhou) were preparing the writing of the volume dedicated to the gymnosperms for the *Flora of China* (1978), followed by C.T.Kuan (Guan Zhongtian) for the *Flora of Sichuan* (1983). However, a certain number of specimens have not yet been renamed and are still found under *C. duclouxiana*. For instance the four isotypes of *C. chengiana* (Cheng 2066) which can be found in Chinese herbaria (IBSC0015839, PE00013191, PE00013349 and SYS00001484) are to this day still stored under *C. funebris*, as they were determined by Cheng in 1930. It appears that these four isotypes have never been looked at by any of the authors of any publication about *C. chengiana*. Indeed, these forgotten sheets have remained completely blank of annotation since 1930. In the West, changes were not made until after the publication of Cheng & Fu (*Flora of China* 1978). As early as 1981-1982, Silba had started to annotate most of the specimens in the main herbaria. It was during this work that he had to form his opinion on the taxonomy of the cypresses of the three basins. In 1994, this author distinguished the South Gansu populations as *C. chengiana* var. *kansouensis*. But the diagnosis was based in part on a confusion that led him to write that the Gansu cypresses had smaller cones than the typical *C. chengiana*. Since this description does not correspond to reality at all, it was not surprising that this variety was not accepted. It was this same confusion that also led Silba to describe a superfluous variety in the district of Wenchuan under *C. chengiana* var. *wenchuanhsiensis* (see below p. 29).

In his *Flora of Sichuan* (1983: 165), C.T.Kuan, extended the area of *C. chengiana*, like Franco, to all three basins including the area near Kangding: “*C. chengiana*, Sichuan: high basin of the Dadu He, Maerkang [Barkam], Jinchuan, Xiaojin, Kangding and in the upper basin of Min Jiang, Maowen [Mao Xian], Wenchuan, Li Xian, etc., generally between 1800 to 2600 m, minimum 1500 m in Kangding, Donggu “东谷”^[7] [Dadu He], maximum 2800 m in Xiaojin, Chongdehai [Chongde Xiang]. In the warm climate valleys of the Daxiaojinchuan [Dajin river] and its tributaries, it is likely that in the past there were dense populations of cypress trees in these places. In 1904 and 1908, E.H.Wilson had explored these hot, dry valleys between 1300 and 2500 m [2600 m]. In his time cypress trees were still common according to him. But, because of its very good wood quality, it has been used a lot to build Buddhist monasteries, villages, which has led to deforestation and that

⁶ Translated from Chinese by JH & Li Shurong:

胡秀英于1964年根据四川西北部4号标本建立了本种，正确地把本种和干香柏区别开来。但由于她见到的标本有限，因而对本种的认识是不全面的。例如她一方面正确地指出本种小枝圆柱形，与西藏柏木*Cupressus torulosa* D.Don相似，另一方面却说本种球果小到直径只有0.5-1厘米。实际上本种球果直径多为1.2-2厘米，除非发育不良的不正常球果或未成熟的球果才较小。

⁷ The sentence: “minimum 1500 m, Kangding, Donggu 东谷” is inconsistent, because the lowest point of the Donggu river (Maoni river) is ca.1900 m above sea level and it is located in the district of Danba. C.T. Kuan has certainly confused with the old name “Tong He” (Tung river in Wilson) that is the Dadu He, which flows near Kangding and where cypresses have been harvested at this altitude.

is why it is rare now. An investigation in 1958 found only one small sparse stand of this cypress downstream of Songgang [Songgang Zhen (10 km W of Barkam)]; it is sporadic between Keryin and Chuosijia [between Ke 'eryin and the Duke river valley (N. Jinchuan Xian)]; in Xiaojin there are some survivors at Mudanqiao 木担桥 [place not found] and in Chongde [Chongde Xiang]; it is also present at S Gansu. The type specimen comes from Wenchuan. *C. chengiana* var. *jiangensis* (N. Chao) C.T. Kuan [sic] recently discovered in Jiange, Hanyang, east of Chuanshan gonglu [the road from Sichuan to Shaanxi] at an altitude of 900 m., is sporadic in Xiaojin, Muyaqiao, 2800 m of altitude. At Jiange, Hanyang in an ancient cypress forest, a single specimen was observed, height 27 m, circumference 1.7 m.”⁸

Meanwhile in 1992, L.K.Fu and Xie Lai extended the *C. chengiana* distribution range to one additional district located in the upper basin of the Dadu He: Danba Xian, but still not near Kangding (Fu Likuo 1992: 32).

In the second edition of the *Flora of China*, vol. 4 (1999), the authors of the Cupressaceae section, Fu Ligu (L.K.Fu), Yu Yongfu and Aljos Farjon, confirm the concept of a single species, *C. chengiana*, in the three basins, but without specifying the outline of the distribution area indicated in the previous edition.

Farjon (1999: 45 and again in 2001: 48) located *C. chengiana* only in “China: S. Gansu, NW. Sichuan (Min River drainage.)” although mentioning *C. fallax* of the Dadu He as synonym.

Farjon, like Silba and Franco, had mistakenly located the type locality of *C. chengiana* (Cheng 2066) in Kangding. As a result, in 2005, Farjon expanded the distribution of *C. chengiana* to this district too (Farjon 2005: 191). Since then, the nomenclature and the distribution area have not changed. The distribution of *C. chengiana*, in the broad sense of Farjon, corresponds to the concept of *C. chengiana* by C.T. Kuan and *C. fallax* by Franco (apart from his Tibetan paratype⁹). But it no longer fully corresponds to the concept of Cheng and Fu (1978) and even less to that of the author of the species name, S.Y. Hu.

The taxonomy of the endemic Sichuan and Gansu cypresses

C. chengiana was until recently considered (*The Plant List*, *World Checklist Kew*) as consisting of a single species, *C. chengiana* with a single variety, *C. chengiana* var. *jiangeensis* (N. Zhao) Silba. Five other taxa were generally considered to be identical to the type species: *C. chengiana* var. *wenchuanhsiensis* Silba, *C. chengiana* var. *kansouensis* Silba, *C. fallax* Franco and two unpublished names, *C. microcephala* Hao and *C. kansuensis* Cheng. New data published since 2010 allow after a detailed examination to draw other conclusions (see Maerki & Hoch 2020).

C. teretus Law, *nom. nud.*, is a name designating specifically the cypresses of the Bailong Jiang valley in Gansu. It appeared in a single Chinese publication in 1947, but no herbarium specimen annotated *C. teretus* has been found. Therefore there is no type locality linked to that name and it is treated separately (see p. 33).

Cupressus jiangeensis N.Zhao is only represented by a single individual cultivated outside its distribution range. As such it does not fall within the framework of the wild area of these cypresses, but needed a thorough revaluation and is discussed separately (see previous article, p. 15).

See the dedicated detailed taxonomical treatment of the endemic Sichuan and Gansu cypresses in the previous [issue of this Bulletin](#).

⁸ Translated from Chinese by JH & Li Shurong.

⁹ Franco also included a specimen, *Ludlow, Sherriff & Elliott 13345*, from Tibet. This specimen corresponds to *C. gigantea* W.C.Cheng & L.K.Fu (1975).

Type localities

The standard localities which represent these six (or seven) taxa were either unknown or very approximate. When comparing these taxa with each other, it is necessary to seek to locate each of their **type localities** very precisely in order to distinguish them geographically:

1. *C. chengiana*;
2. *C. microcephala* (unpublished);
3. *C. chengiana* var. *wenchuanhsiensis*;
4. *C. fallax*;
5. *C. kansuensis* (unpublished);
6. *C. chengiana* var. *kansouensis*;
7. *C. jiangeensis* (see article p. 15).

1. Type locality of *Cupressus chengiana* S.Y.Hu

The type specimen of *Cupressus chengiana* was collected in 1930 by W.C.Cheng (Cheng 2066). This Chinese botanist considered it later as identical to *C. duclouxiana* (Cheng 1939: 90). The labels on the Cheng 2066 herbarium specimens, however, were first all annotated with *C. funebris* Endl. and have been distributed under this name to the main western herbaria. In 1964, *chengiana* was distinguished as a species by the Chinese botanist S.Y.Hu (Hu 1964: 57) using the Cheng 2066 specimen at the herbarium of the Arnold Arboretum. She named the new species in tribute to her compatriot Cheng, the collector of the type.

The holotype A00022476 is annotated: “Sichuan, N.W. Wenchuanhsien” (Wenchuan Xian district). At the harvest date, the chief-town of this district was Miansi. This town borders the Min (Jiang) river. This is the reason why in the protologue S.Y. Hu locates the species in the “Min River Valley”. Mrs Hu Shiu-Ying also indicates a Chinese vernacular name: 川柏 (Chuān bǎi), Sichuan Cypress. The name of Min Jiang Cypress (岷江柏木) does not appear until later in volume 7 of the first version of the *Flora of China* (Cheng & Fu 1978: 334). Until then, everything seemed to indicate that the type (Cheng 2066) comes from the Min Jiang basin. However, of the ten Cheng 2066 specimens found in different herbaria, four bear the mention “Tachienlu” and not N.W. Wenchuan: BM000546887, K000088054, PE00013349, US00012089. As a result, several authors (Franco 1969, Silba 1994, Farjon 2005, 2010) have located the type locality of *C. chengiana* in Tachienlu (Kangding). Silba even distinguished a new variety at Wenchuan (Silba 1994: 25).

One may wonder if Cheng could have collected his specimen #2066 at both locations. By the most direct route, there is almost 400 km between Kangding and Wenchuan. All of the Cheng 2066 labels are dated 2 November 1930. It was impossible for Cheng to harvest from these two locations on the same day, so that in fact there is only one typical locality possible. These same two localities and the same date are also found on the specimens of another collection of *C. chengiana*: Cheng 2073. At least this is evidence that Cheng numbered each different tree from which he took samples separately. There is no further information on the ten Cheng 2066 specimens to confirm which of the two localities is the correct one. In addition, the species (as then circumscribed) exists in both places and thus does not allow to exclude either of the two localities. An email sent to Farjon at Kew in September 2010, received the answer that Kangding (Tachienlu) was the right place, but the argument put forward: “Kew’s label, K000088054, is the only one manuscript” is not convincing for several reasons:

- the label is stamped “Chekiang” (which is the Zhejiang Province and not Sichuan);
- the handwritten part designates “Techienlu” and not Tachienlu.

It is hard to admit that Cheng could have made two such gross mistakes. Another handwritten annotation next to the label says “Sichuan, Kangding”, but again, it is not the writing of Cheng, which moreover, in 1930, would have indicated Sikang, Tachienlu and not Sichuan, Kangding. Kew’s specimen therefore had no more or less evidence than the other nine samples and did not resolve the question of the holotype locality. In an attempt to elucidate this mystery, a complete compilation of all the W.C.Cheng collections during the period preceding and following his #2066

was carried out. It was intended to trace his route from October to November 1930 (cf. Appendix C, p. 58). The large number of labels revealed that Cheng was traveling from south to north, from Dujiangyan to Wenchuan. It is thus possible to establish with certainty that on 2, 3 and 4 November 1930 Cheng was in the district of Wenchuan and to confirm that the type locality and therefore the *locus classicus* of *C. chengiana* is NW Miansi (Zhen) 绵虬镇, capital of the Wenchuan district (Xian) in 1930. Since 1952, the capital of the Wenchuan district has been the city of Weizhou (Zhen). This study also made it possible to understand that Kangding was the base camp of Cheng and his team and that his explorations radiated from this locality. This explains why pre-filled “Tachienlu” (Kangding) labels had to be produced in large quantities and that they were often misused without having been corrected. From a more general point of view, it clearly appears that during this period, the good Cheng labels are always those whose locality name is preceded by “Szechuan:” and that those indicated simply “Tachienlu” are those which have not been corrected. The result of this investigation confirms that the taxon *C. chengiana* var. *wenchuanhsiensis* Silba is superfluous (see p. 29). This result was also used by Farjon (2016) – following a second email exchange after 2010 – to correct the type locality of *C. chengiana* in the second edition of his *Handbook of the World's Conifers*.

2. *Cupressus microcephala* K.S.Hao (unpublished)

Among the *C. chengiana* from the Beijing herbarium, PE00012998 has an annotated label “*Cupressus microcephala* Hao n. sp.” It is a specimen collected by W.C.Cheng (*Cheng* 3321) and it comes from the Min (Jiang) river valley in Sichuan.

The interesting aspect of this herbarium name lies in the fact that it dates from the 6 April 1946, eighteen years before the publication of *C. chengiana* by S.Y.Hu (1964). This means that Hao was the first botanist to consider the Min Jiang cypress as a new species.

The author of *C. microcephala* is the Chinese Hǎo jǐngshèng, 郝景盛. The standardised name is written K.S.Hao (Kin Shen Hao). On the label date (1946), Hao was a professor at the Science Museum of Western China (Chongqing), today the Chongqing Natural History Museum Herbarium (CQNM). Among the *Cupressus* from the CQNM herbarium, there are three additional specimens determined as *C. microcephala* K.S.Hao.

- PE00012998 and CQNM0000357: *W.C.Cheng* 3321 (1931.09.21) Sichuan, south of Fengyi Zhen city, chief town of the district of Mao Xian, alt. 1600 m;
- CQNM0000355: *W.C.Cheng* 3435 (1933), Sichuan, Wenchuan Xian district, no specific locality;
- CQNM0000361: *T.T.Yü* 2712 (1933.11.15), Sichuan, [north-west and near Mianzi Zhen], Wenchuan Xian, Mt Tongling (Shan) 铜陵山, alt. 2100 m.

These four specimens all come from the Min Jiang basin. In 1946, many other specimens were available to Hao in the Chongqing Herbarium, but it appears that his concept of *C. microcephala* was limited to this valley only.

At that time all the other botanists had always confused the Min Jiang cypress with species already described: *C. duclouxiana*, *C. funebris* or *C. torulosa*. Thus it appears that Professor Hao was a precursor in the botanical history of this species. However, this very same year, Hao was promoted to the dean of an agricultural college and had to move to Shenyang, Liaoning. It is likely that it was this move which led to the fact that this herbarium name was never followed by a valid publication. Later, one of the four specimens determined by Hao has been sent to the Beijing Herbarium (PE). In 1959, Beijing botanists W.C.Cheng and W.T.Wang unfortunately did not take the opportunity to validate his name because they had considered that the specimen in question was identical to *C. duclouxiana* from Yunnan. The same year, these two botanists identified as *C. funebris* the duplicates PE00019352 and PE00013000, *Cheng* 3435 and *T.T.Yü* 2712 (*C. microcephala* K.S.Hao, CQNM 0000361, CQNM 0000355). This example shows the difficulty there was to affiliate these cypresses with small cones to one of the already known species.

Five years later, it is finally a compatriot, S.Y.Hu, who, while studying another specimen (*Cheng 2066*) at the herbarium of Harvard, will validate the cypress of Min Jiang as a new species. Hu's description of *C. chengiana*: "fructibus globosis, 5-10 mm diametro" corresponds particularly well to the meaning of the name "small-headed cypress" chosen by Hao. There is no doubt that the specimens annotated *C. microcephala* are identical to *C. chengiana* because they all come from the same valley, and even from the same place (*T.T.Yü 2712*).

3. Type locality of *Cupressus chengiana* var. *wenchuanhsiensis* Silba

As we saw in the previous lines devoted to the type locality of *C. chengiana* (*Cheng 2066*), Silba had mistakenly located the type of the species in the valley of the Dadu He, near the city of Kangding. It was this mistake that led him to distinguish the variety in question here. In the protologue of *C. chengiana* var. *wenchuanhsiensis*, Silba quotes the type (*Cheng 2066*), but his conception of the typical *C. chengiana* is mainly based on the *Wilson 2106* specimen, a sample collected in the Dadu He valley, with larger, usually oblong cones and generally with more or less 10 scales.

Indeed Silba distinguishes its new variety as follows: "Female cones smaller than the standard variety and more globular, light golden brown in color, with fewer scales, the scales generally being in number from 6 to 8. Brown seeds golden and with thin transparent wings." However, this description coincides particularly well with that of S.Y. Hu (*Cheng 2066*): "Globular cones, from 5 to 10 mm diameter, 6-8 scales, brown seeds."

Silba chose Kew's *Wilson 798a* as the type for his var. *wenchuanhsiensis*. This specimen comes from the "valley of the Min River, Sichuan, west & near Wenchuan Hsien, alt. 1600 m." That is precisely from the same place as the type of *C. chengiana* (*Cheng 2066*).

Cupressus chengiana var. *wenchuanhsiensis* (*Wilson 798a*) therefore comes from the same population as the type of the species *C. chengiana* (*Cheng 2066*) and the two descriptions are clearly very similar. There is thus every reason to consider var. *wenchuanhsiensis* as a synonym of *C. chengiana*.

It remains that Silba based his decision to name his variety on differences from a specimen (*Wilson 2106*) from the Dadu He basin. This specimen is the type of *C. fallax* Franco that will be dealt with in the following pages.

4. Type locality of *Cupressus fallax* Franco

The Portuguese botanist Amaral Franco described *C. fallax* in 1969 from herbarium specimens collected in China. The designated type is *Wilson 2106*, from Sichuan province. The holotype is BM000799203 and two isotypes are also available, E00182050 and K000088055. This cypress has generally been considered to be synonymous with *C. chengiana* S.Y.Hu (*The Plant List, World Checklist Kew*). The main reason is that in the protologue, Franco unfortunately includes the specimen *Cheng 2066* in his list of paratypes. This collection is the holotype of *C. chengiana* described five years earlier by S.Y.Hu. Franco was unaware of this publication as he does not mention Hu's binomial Latin name in his paper. By designating *Cheng 2066* as a paratype, Franco condemned his *C. fallax* to be considered identical to *C. chengiana* and his own new name as a synonym. The main reason given for synonymy by Silba (1981), which was later supported by Farjon (1999, 2001, 2005, 2010), is the fact that, like Franco, these two authors thought that the specimen *Wilson 2106* and *Cheng 2066* came from the same locality, that is from the Dadu He valley.

However, the types designated in the two publications are not the same and their descriptions differ significantly. Franco speaks of cones of 15 to 20 mm in diameter, composed of 8 to 10 scales, while Hu indicates cones of only 5 to 10 mm in diameter composed of 6 to 8 scales. On the specimens, the cones of both types had reached their full development; their age therefore does not explain the differences noted by the two authors. Such observations deserve further investigations and attention to the type of *C. fallax* (*Wilson 2106*). The objective is then to check if statistically the

sizes of the cones present significant differences, on one hand, and if these possible differences can be explained by two distinct geographical origins, on the other hand.

As noted above, the type of *C. chengiana* comes from Wenchuan in the Min (Jiang) river basin. The provenance of the *C. fallax* holotype (Wilson 2106) is rather vague: “Western Sichuan” is the only indication on the labels of the different specimens. Wilson cites a few more details in *Plantae Wilsonianae*, “valley of Tung river, dry region, alt. 1300-2600 m.” (Sargent 1917: 55). This indicates the valley of the river Dadu (Dadu He). Again this is not a very precise indication, but Wilson adds that he had made several photographs of these trees. On the backs of these photos are precious indications of localities, altitudes and complete dates. This information was used to help locate the exact location of Wilson 2106 (type of *C. fallax*).

The comments on the photos of Wilson which concern the Wilson 2106 collection are reproduced here (these photos are accessible through the links provided in Appendix A):

- Photo n° 157: “View west of Romi-Chango. Tibetan hamlet and cliffs with *Cupressus* dotted all over. 7500 ft. 1908-07-02.”
- Photo n° 158: “Wilson 2106, West of Romi-Chango, W. Szechuan, 8,000 ft. 1908-07-02”
- Photo n° 252: “Wilson 2106, Gorge and cliffs of Tachien-lu River, 4200 ft. 1908-07-30”
- Photo n° 256: “Wilson 2106, Valley of Tung River, 4000 ft. 1908-07-31”
- Photo n° 257: “Wilson 2106, Valley of Tung River, 4000 ft. 1908-07-31”
- Photo n° 259: “Wilson 2106, Valley of Tung River, 3500 ft. 1908-08-01”

As can be seen, Wilson indicates at least three different places for the same number Wilson 2106. It is a recurring difficulty that is encountered with Wilson; he determined the trees on the spot and when they seemed identical, he assigned the same collection number to many different specimens, regardless of their locality. It is therefore difficult, if not impossible, to trace the precise origin of a specimen, especially since the labels of the Wilson 2106 do not indicate the altitude or the day of harvest, but just “Western Sichuan, July 1908”.

In *Plantae Wilsonianae* (Sargent 1914: 55), Wilson does not indicate the locality W. of Romi-Chango (Danba), nor the one of the Tachien-lu river (Wasi Gou), but as will be seen, the altitudes from 1300 to 2600 m also match with these localities. By not indicating any particular locality, it is possible to understand “valley of Tung river” in two ways; in a strict sense and in this case the typical locality would be represented by the photos n° 256, 257 and 258, which are labelled “valley of Tung river”; or in a broad sense, that is to say the whole basin of this river where Wilson indicates #2106 on his photos and which corresponds to the entire amplitude of the altitudes he gives.

The altitudes in feet of Wilson's photos are all a little too low compared to the reality on the ground. However, the altitudes given in metres in *Plantae Wilsonianae* (Sargent 1914: 55) correspond perfectly to the places where these photos were taken. Indeed, the place which represents the lowest altitude, 1300 m, corresponds to photo n° 258. It was taken on the same day as photos n° 256 and 257 and is inserted between those and the photo n° 259. There is no doubt that the four pictures were taken in relatively close locations. Photo n° 258 shows a landscape south of Luding, a town bordering the Dadu He (Tung river). This landscape allows to locate the precise place which is at the altitude of 1300 m as indicated by Wilson.

It is necessary to go very far upstream in the Dadu He basin, to photos n° 157 and 158 to find the place which corresponds to the highest altitude of 2600 m mentioned by Wilson. The comments on these photos point to a Tibetan village west of the city of Danba (Romi-Chango). This village could be identified as Jingbei Cun. At this location, the cypresses are present between 2200-2600 m above sea level. The corrected location and altitudes in feet correspond perfectly to photos n° 157 and 158.

Finally, photo n° 252 represents a third intermediate locality which is the Wasi river “Tachien-lu River”. This mountain stream descends from the city of Kangding (Tachienlu) and flows into the Dadu He. Here again, the following photo, n° 253, dated of the same day, made it possible to locate approximately the place where the *Cupressus* were in photo n° 252. Photo n° 253 shows the junction of the two rivers. At this precise place the altitude is 1400 m. By adjusting the differences in altitude indicated in feet on the two photos accordingly, it is possible to position the cypresses in

photo n° 252 at around 1470 m, i.e. not far from the mouth of the Wasi mountain stream and therefore close to the Dadu He (Tung river).

To summarise: Wilson locates his #2106 in at least three different places:

- Three km south of the town of Luding, altitude 1300 m, at 29°53'6.9"N, 102°12'59.7"E;
- Near the mouth of the Wasi mountain stream, altitude approximately 1470 m, at approximately 30°4'26.5"N, 102°8'55.5"E;
- West of the town of Danba, around the village of Jingbei Cun, at an altitude of 2600 m, at 30°47'36.6"N, 101°46'33.2"E.

In conclusion on the type locality of *C. fallax*, the indication: “valley of the Tung river, 1300-2600 m., Wilson n° 2106” does not correspond to a specific place. The type of *C. fallax* may come from any of the three places mentioned above.

However, it is certain that the type of *C. fallax* with large cones (*Wilson 2106*) comes from a valley (the Dadu He and its tributaries) clearly separated from that from which the type of *C. chengiana* with its small cones (*Cheng 2066*) comes from (the Min Jiang and its tributaries).

Of the origin of the epithet *fallax* (fallacious), Franco does not explain why he chose that name for his new species. The explanation may be that Franco saw the specimen with small cones *Cheng 2066* (BM000546887) with its erroneous label Tachienlu (Kangding) as for its place of collection. He had certainly also read Wilson's sentence: “cones usually 2-2.5 cm in diam .; occasionally they are less than 1 cm. long and broad, but is very unusual.” (Wilson 1926: 61). It is possible to make the hypothesis that it was the extreme variability of the specimens supposed to come all from the same place, the Dadu He valley, that inspired the name of the fallacious (misleading) cypress to Franco.

5. Type locality of *Cupressus kansuensis* W.C.Cheng (unpublished)

There are two specimens collected in Gansu in 1951 by T.P.Wang (*Wang 14286* and *14304*) found in the Beijing Herbarium (PE), classified under *C. chengiana* S.Y.Hu. On the two sheets a label indicates: “*Cupressus kansuensis* Cheng sp. nov.” and is signed “C.D.Chu (Zhu Zhengde) 1.3.1973”. The *Wang 14286* (PE) specimen is stamped “type”, and the *Wang 14304* (PE) probably too, but the Herbarium's photo only shows a part of the stamp. However, this herbarium name was never followed by a valid publication. It was also not possible to find any document in which W.C. Cheng mentions this name. Yet, it is likely that he had considered distinguishing a new cypress from Gansu and that he shared his intention with C.D.Chu. The Beijing Herbarium locates these specimens in the Xigu Qu district, in the centre of Gansu, near Lanzhou, the capital of this province. These two collections are the only *Cupressus* listed this far north. All the other Gansu specimens come from the Bailong (Jiang) river basin, located about 260 km further south. A third specimen, PE00013003, this time collected at Wudu on the Bailong Jiang by W.Y.Hsia (*Hsia 6389*) also bears the same label “*Cupressus kansuensis* Cheng, sp. nov.”, signed by Chu. In 1977, L.K.Fu, the co-author with Cheng of volume 7 of the *Flora of China* (1978), had re-determined these three specimens as *C. chengiana* S.Y.Hu and the case ended there.

- Experience however shows that it is instructive to do further study of specimens collected outside the commonly accepted distribution range. These two specimens from W.T.Wang are the only *Cupressus* identified in central Gansu and they are arousing curiosity. The two herbarium sheets bear the original labels, on which Wang wrote: “甘肃西固憨班铺”. The transcription of the place by the PE herbarium in Beijing is: “Gansu, Xigu Qu, Hanban (pu)”. However Wang does not write Xigu Qu, but Xigu in short, which very probably designates the ancient city of “Siku”, today Zhugqu, chief town of the district of Zhugqu (Xian), located on the Bailong Jiang river. Several elements make this believable:
- two maps (Dingle 1908 and 1917) indicate a city of Siku, with the same spelling as that of Wang, 西固 (Xigu) at the place of the current city of Zhugqu;
- there is no municipality called Hanban in the district of Xigu Qu; there is, however, one in the Zhugqu district;

- the Hanban municipality in Zhugqu district is located along the Bailong Jiang in the general area of this species in Gansu.

To be absolutely certain of the locality, a more in-depth search on the numbers of the collections close to *Wang 14286* and *14304* was carried out. On the same date (1951.07.10), two other localities emerged from this research; the municipality of Heiyu Si (黑峪寺) and the gorge of Heiyu gu (黑峪沟). These two places are located near the village of Hanban (cun), in the district of Zhugqu and this unequivocally confirms that it is this locality which is correct. The correct repositioning of *Wang 14286* and *14304* specimens provides proof that there is no other *Cupressus* population 260 km further north of the traditional distribution range.

6. Type locality of *Cupressus chengiana* var. *kansouensis* Silba

The name of this variety is written *kansouensis* and it does not have as basionym the name of the taxon which has just been mentioned in the previous section and which is written *kansuensis*. The two names derive from the old western spelling of the Chinese province of Gansu (Kansu or Kansou). This variety *kansouensis*¹⁰ therefore has its own holotype, for which Silba has designated the specimen *Meyer 1981*, K000088053 (Silba 1994: 25). The place and date of collection indicated by F.N.Meyer is: 18 October 1914 near "Chu kun". So far this place has not been located or updated. It is thus necessary to find out where the type of this *kansouensis* variety comes from and to be able to locate it on a map.

There are few old maps of Gansu; none of the ones which have been consulted had a place called "Chu kun". Among the photographs by Frank Meyer dated 18 October 1914, there are three indicating "Chu kun". These photos show that it is probably a small town located on a plain. The same day, Meyer indicates another locality "Sze men". In the days preceding and following the *Cupressus* collection, other old names of localities are mentioned and they are translated phonetically: "Chieh chou", the river "Hei shui Kiang", "Lian dja pa" and "Siku". One after the other, these places could be updated:

- Chieh chou = Wudu, district capital city;
- Hei shui Kiang = Bailong Jiang river (formerly Black Water river);
- Lian dja pa = Liangjiaba village (cun);
- Siku = Zhugqu, district capital city;
- Sze men = Shimen (Xiang) county capital.

It only remained to retrace the direction of Meyer's journey by the dates of his photos and to follow his path on a map. One can thus locate "Chu kun" in the district of Wudu, northwest of Shimen county, in the Bailong Jiang valley and southeast of Zhugqu district and Liangjiaba village. Only one locality in this area corresponds to "Chu kun", and it is the Jiaogong village 角弓. It must be remembered that Meyer had translated the name of this village phonetically and *a priori* "Jiaogong" does not quite correspond to "Chu kun". However, the sinogram 角 is usually translated "Jiao" but it also can mean "Jue", so that it is possible to also translate the name of this village as Juegong. With the local accent, pronunciation of Juegong could perfectly lead Meyer to understand "Chu kun".

To summarise.

The type locality (*locus classicus*) of *C. chengiana* var. *kansouensis*, can be located around the municipality of Jiaogong/Juegong/角弓, in the county of Jiaogong/Juegong zhen, ~33°33'50.0"N, 104°38'46.2"E. The location is in the centre of the Bailong Jiang cypress population in southern Gansu.

¹⁰ In 2005, Silba raised his *kansouensis* variety to the rank of subspecies: *C. chengiana* subsp. *kansouensis* (Silba) Silba, *J. Int. Conifer Preserv. Soc.* 12: 59.

***Cupressus teretus* Y.W.Law, *nom. nud.* (Kansu cypress)**

In an article on the “silviculture of Kansu trees”, S.C.Teng (1947: 226) indicated that his colleague Y.W.Law (Liu Yuhu 刘玉壶) had found that the *Cupressus* specimens collected in the lower Bailong Jiang valley in southern Gansu differ from those in Sichuan:

“Therefore, a new species, *C. teretus*, is described by Law and will soon be published.”

In his 1947 article, Teng adopted the name *C. teretus* to designate the Gansu Cypress: “The range of *C. teretus* Law appears to be confined to southeastern Kansu in the Lower Peilunkiang Valley [Bailongjiang] where the climate is comparatively warm and humid. At one time, this species probably formed extensive forests in this region. It grows at altitudes below 6,000 feet [ca.1830 m], forming pure stands or in mixture with oaks. It is often cultivated for ornamental purpose and is frequently found near temples and in grave yards. This tree is intermediate in light requirement and stands certain degree of dryness. It is adaptable to planting on many sites within its range. The wood of the Kansu cypress is similar to those of the other species of cypress. It is tough and durable, and is useful for all purposes where toughness and durability are the qualities desired.”

However, no effective publication by Prof. Liu Yuhu (1917-2004) concerning this taxon, nor any herbarium specimen annotated by him could be found.

From the epithet, locality and altitude, there is no doubt that *C. teretus* represents the very first scientific name to designate the endemic cypresses of the Bailong Jiang basin. Teng anticipated Law's publication, but it remained at a planning stage. The same scenario was played again a few years later: W.C.Cheng shared his intention to distinguish the Gansu Cypress with his colleague C.D.Chu. As a result, in 1973, C.D.Chu affixed “*Cupressus kansuensis* Cheng *sp. nov.*” on specimens from the Bailong Jiang valley. But then again, time, doubt or lack of sufficient material prevailed over the intention and this name was not followed by a valid publication (cf. 5. Type locality of *C. kansuensis*). Twenty years later, Silba tried rather awkwardly to distinguish the Gansu Cypress from those of Sichuan by publishing *C. chengiana* var. *kansouensis* (Silba 1994: 25), followed later by *C. chengiana* subsp. *kansouensis* (Silba 2005: 59). As his description was partly erroneous, these infra-specific names were not accepted. Finally the compilation of the results of numerous researches, as well as genetic, biogeographical, paleobotanical and morphological comparisons made it possible to gather all the necessary elements to distinguish the Gansu Cypress as a species in its own right under the name of *C. gansuensis* (Maerki & Hoch 2020: 4). Out of respect for the precursors who did not have all the information to give concrete expression to their justified ideas, the type chosen for *C. gansuensis* is the same specimen as the one which C.D.Chu had stamped as a *C. kansuensis* type and which he attributed to W.C.Cheng. (*T.P.Wang* 14286, PE00013002). The new epithet was also chosen for its similarity, but has been corrected to match the current spelling of the province name: Gānsù in Pinyin and Gansu in English.

The geographic distribution of the endemic Sichuan and Gansu cypresses

The distribution range of the *C. chengiana* as previously circumscribed extends between two Chinese provinces. The southernmost population is south of the city of Luding, in the Dadu He valley in Sichuan. The northernmost station is located south of Gansu, Zhuguo district, in the Bailong Jiang valley. The distribution range is situated between these two areas some 480 km apart.

It is possible to clearly distinguish three separate watersheds:

- in southern Gansu, the Bailong Jiang basin;
- in Sichuan, the Min Jiang basin;
- also in Sichuan, the Dadu He basin.

In each of these three basins, the populations are linked together by the network formed by the rivers. The deep valleys and gorges provide communication corridors where pollens and seeds can circulate locally without hindrance other than the distance. However, due to geographical partitions, inter-basin genetic exchanges are considerably reduced or even null. This geographic compartmentalisation of the populations may constitute favourable conditions for allopatric speciation.

1. The Dadu He basin, southeast Sichuan, *C. fallax* area.

This is the largest and most complex network. The area forms a cross about 200 km from north to south and 75 km from east to west. The centre of this area is the city of Danba. In China the name of watercourses is attributed to a section of the river and the name of the same watercourse can change at the junction with another river. Thus the Dadu (He) river takes its name only from the south of the city of Danba.

North of the basin at altitudes between 2,300 and 2,520 m, the cypress populations are found on the slopes of the valleys of the rivers Dajin, Duke, Suomo and Jiaomusu. They are located in the southwest of the Barkam district and in the north of the Jinshuan district. These stations are close to each other; they are concentrated in a section of about 40 km long. The valleys facilitate dispersal and there is no barrier to hinder genetic exchange between these stations. These localities can be considered as one and the same population. The only open way towards other populations is in the south beyond the valley of the Dajin river (high basin of the Dadu He).

The southern area begins at the lowest altitude of 1,300 m, downstream from the city of Luding and, almost without marked discontinuity, goes back up the Dadu He [river], to the city of Danba at 1,900 m. It is also distributed within adjacent valleys: east of the city of Kangding in the gorge of the Wasi mountain stream and further north in the Jintang valley.

The Dadu He valley is very strongly impacted by human activity. Many places have been remodelled by construction and hydro-electric facilities. The species may therefore be totally absent on sections of several tens of kilometres. One can nevertheless think that in the past the valley was populated with cypresses without discontinuity over this entire area.

West of the city of Danba there are cypress trees up to 2,600 m above sea level on the slopes of the Donggu He valley and around the township of Dongguxiang. JH personally observed several young cultivated specimens, another 20 km further south in the Donggu He valley, near the hamlet of Maoniucun where W.C. Cheng also collected it in 1930.

The eastern part of the area is mainly north and east of the city of Xiaojin, in the valley of the Xiaojin He [river] and its tributaries: Fubian, Chongdegou and Wori. The altitudinal range for the Xiaojin populations is between 2,200-2,990 m above sea level.

2. The Min Jiang basin, central Sichuan, *C. chengiana* area.

The Zagunao river flows between the cities of Zagunao (Li Xian) and Weizhou (Wenchuan Xian). It is the main artery of this area; it extends west into the Main and Laisu valleys. In the east, on a stretch of the Min Jiang valley, there are stations north and south of the city of Fengyi (Mao Xian). The type locality of *C. chengiana* is located NW of the city of Miansi in the district of Wenchuan. The entire Min Jiang basin area is completely landlocked. The passage to the west is blocked by the Qionglai range which extends over 250 km and goes on to the south by the chain of the Jiabin (Shan), which ends near the city of Luding by Mount Erlang (Erlang Shan, 3437 m – 29°50'32"N, 102°16'8.7"E). The Min Jiang basin communicates with the Dadu He basin only by a few passes at altitudes of more than 4,000 m. The main crossing point is the Balang Shan pass at an altitude of 4481 m (30°54'26.8"N, 102°53'37.6"E). It links the Xiaojin Valley to the Wenchuan District. In the North, a modern tunnel pierced through Mount Zhegu (Shan) (31°49'57.5"N, 102°41'E) has crossed the Qionglai mountain range since 2004 and linked the district of Barkam to the Laisu river valley in Li (Xian) district. On the east and north side of the Min river basin, the immense Min Shan massif, more than 300 km long, separates Sichuan, in its northern part, from Gansu. The chain extends without interruption towards the south, parallel to the Min Jiang until near the city of Fengyi (Mao Xian) where the chain of Chaping (Shan) takes over towards the Southwest.

Two crossing points connect the Min Jiang basin to Gansu. One is 160 km north of Mao Xian, via the pass on road number S301 at an altitude of 3600 m (33°2'50.7"N, 103°43'53.9"E). This pass allows entry to Jiuzhaigou enclave in Sichuan and then joins the first Gansu valleys to the east. The other crossing point is by the road S302 which is at the meeting point of the Min Shan chain with the Chaping Shan chain, about 6 km east of the city of Fengyi (Mao Xian). At this place a pass,

located at 2200 m altitude (31°41'54"N, 103°54'39.6"E), allows the passage to Gansu province from the south-west by making a detour of more than 300 km through the Longmen mountains (Shan).

3. The Bailong Jiang basin in south Gansu, *C. gansuensis* area.

The cypress area in Gansu covers three districts, Zhugqu (Xian) in the northwest, Wudu (Qu) in the centre and Wen (Xian) in the southwest. The altitudinal range for *C. gansuensis* is between (888-)1,000-1,850 (-2,000) m above sea level. The backbone of this area is the Bailong (Jiang) River. In the southernmost Wen district, the Bailong Jiang is joined from the west by the Baishui and its tributary Danbaohe, then even further south by the Rangshui which takes the name of Shengou in its upper part. One collection in the Baishui river valley is located 4 km outside the Gansu province, in Jiuzhaigou Xian, a landlocked territory of northern Sichuan which is part of the Bailong Jiang basin.

Thus, the *Cupressus* stations in Gansu are geographically very isolated from those in Sichuan – in the Min Jiang and Dadu He basins. Conditions are therefore *a priori* favourable for these isolated populations to initiate a process of allopatric speciation (see Maerki & Hoch 2020 for the taxonomy part of this study).

4. Other localities

After verification, it turns out that all the specimens reported outside the three basins either refer to a cultivated plant (e.g. *C. jiangensis*) or are errors: either a poorly translated place of collection localities, or wrongly determined specimens, confused with *C. duclouxiana*, *C. funebris* or *Juniperus* sp.

Maps (p. 38-44): Map Contents (p. 38).

Appendix A (p. 45-55): List of available herbarium sheets and Wilson's historical photos.

Explanations for the specimen lists, organised by districts (Xiàn or Qū):

- first column: numbers against a green background show specimens which could be precisely localised or/and with geo-coordinates; these numbers are reproduced on the different maps; against a pink background, specimens which could be localised, but point to a population already mentioned;
- the presence of a “x” in the first column indicates that there is no photograph available;
- second column: a herbarium code in blue colour means that there is a clickable link (PDF version only) giving access to the herbarium sheet (with or without a photograph); warning: the Chinese Virtual Herbarium is undergoing a major update and some links could be broken; in that case check either one of the following links:
<http://v5.cvh.ac.cn/search/Cupressus%20chengiana?n=1> or
<http://www.cvh.ac.cn/cvh6/view/spms/list.php?taxonName=Cupressus+chengiana>.
- third column: for each district, the different specimens are ordered by date of collection;
- fourth column: further details are given, especially on localities and geo-coordinates are displayed when available; only geo-coordinates in bold characters are reproduced on the maps.

Recent photos of the Ma'an Bridge locality, courtesy of M. Xiao Feixue (p. 55-56).

Appendix B (p. 57): Groves in the type locality of *C. gansuensis*, according to Wei *et al.* 2019 which give the coordinates of 11 cypress groves around Hanbancun with altitude and exposure details.

List of Chinese herbaria mentioned in this issue (p. 57).

Appendix C (p. 58-60): Cheng's collections in October and November 1930. This database compiled by JH allowed to determine precisely the locality of the type of *C. chengiana*.

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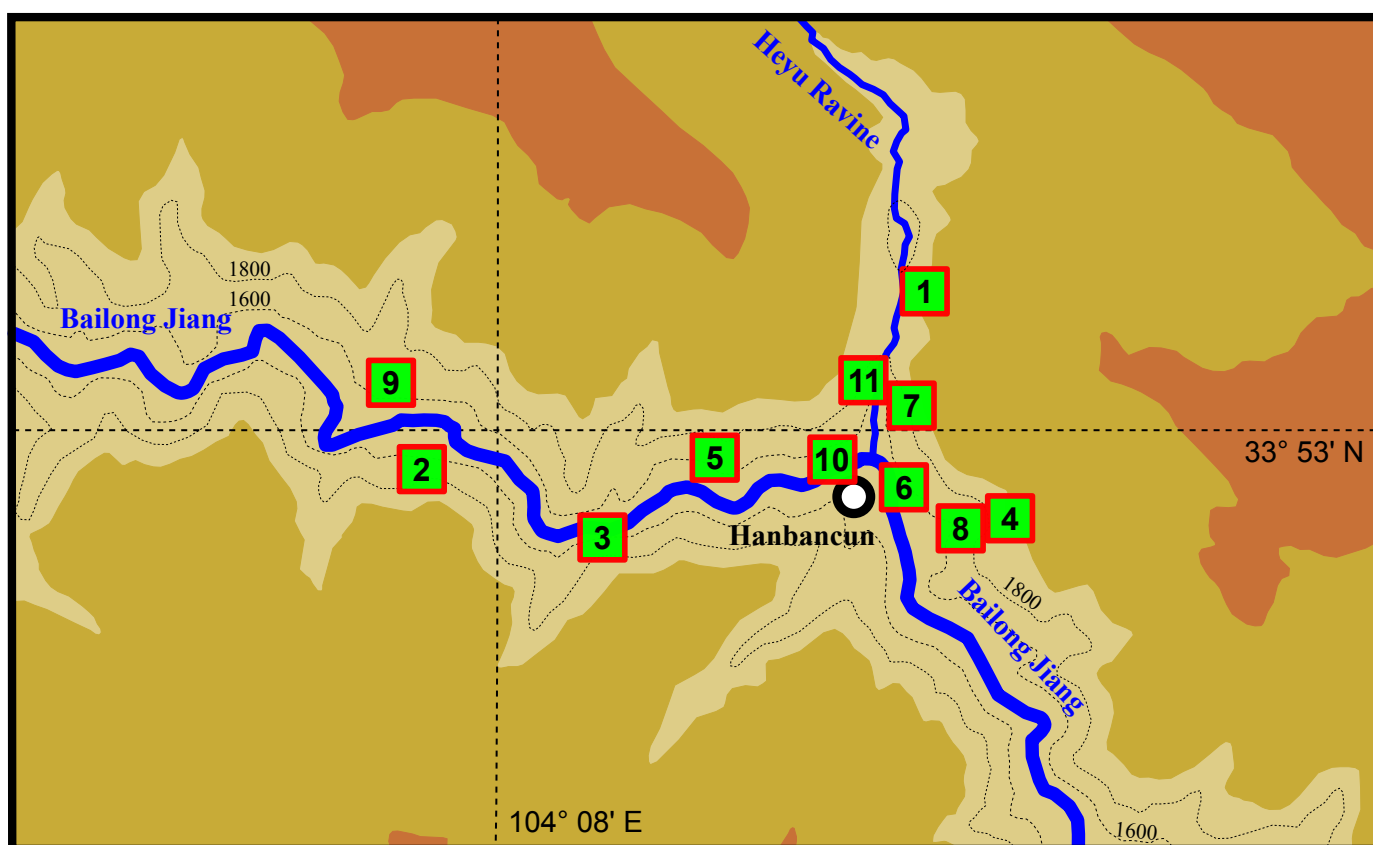
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Maps

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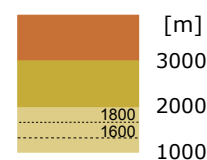
Map 1: Northernmost population of *C. gansuensis*. Population of the type of *C. gansuensis*.
Detailed map according to the data by Wei *et al.* 2019: Table 1.
See photos taken close to Hanbancun, p. 62.

Legend:

5 Localities
according to Appendix B

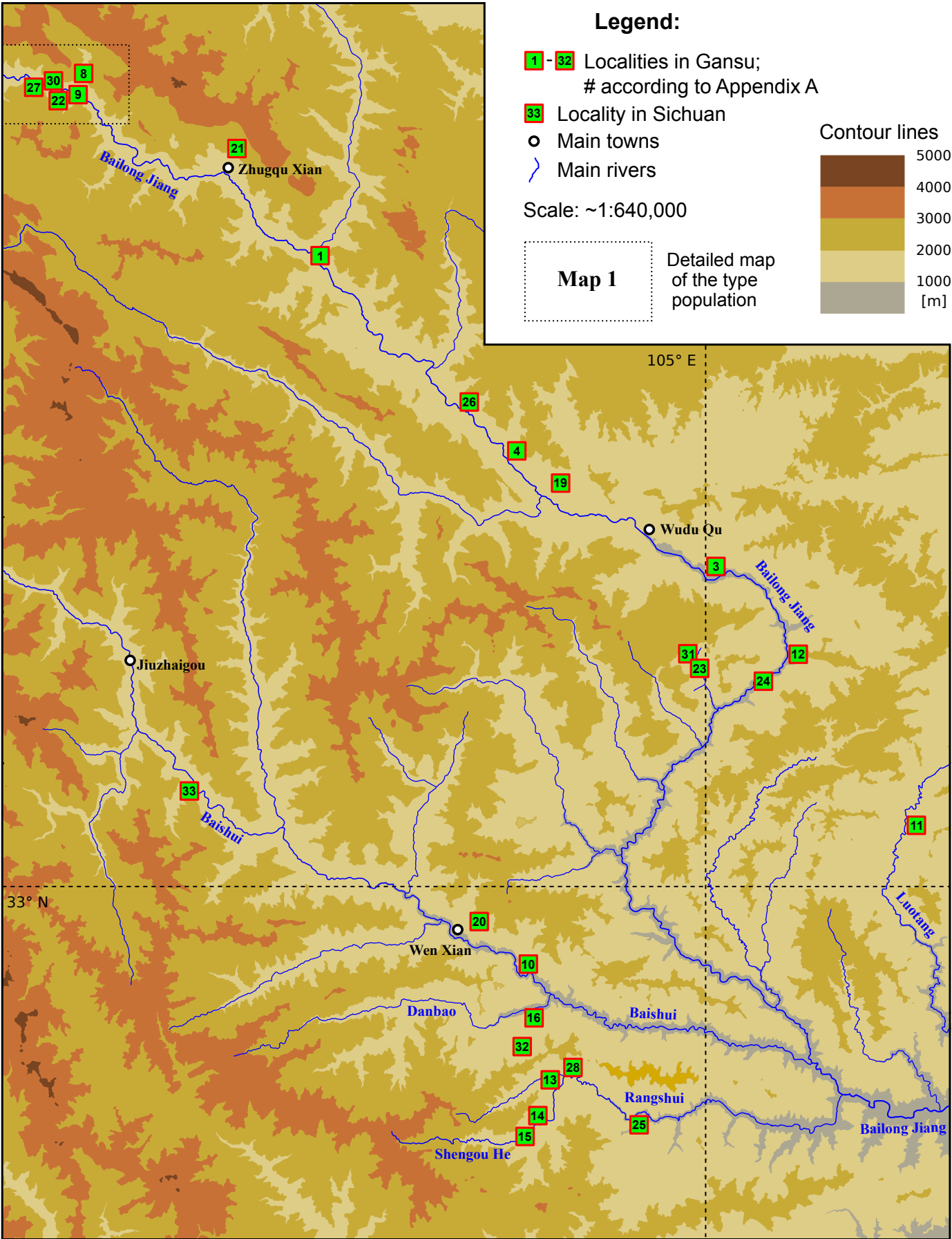
○ Town
~ Rivers

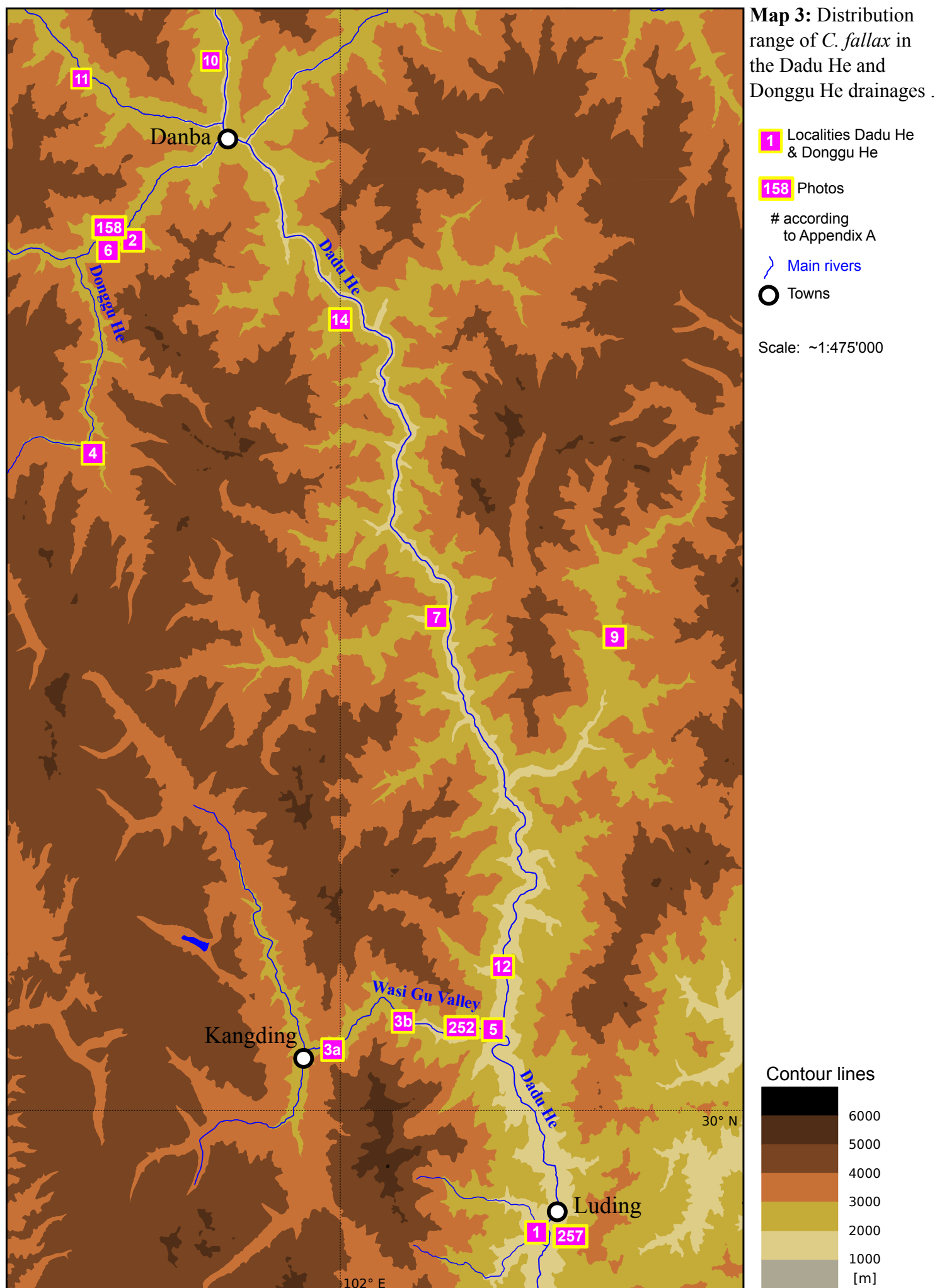
Contour lines

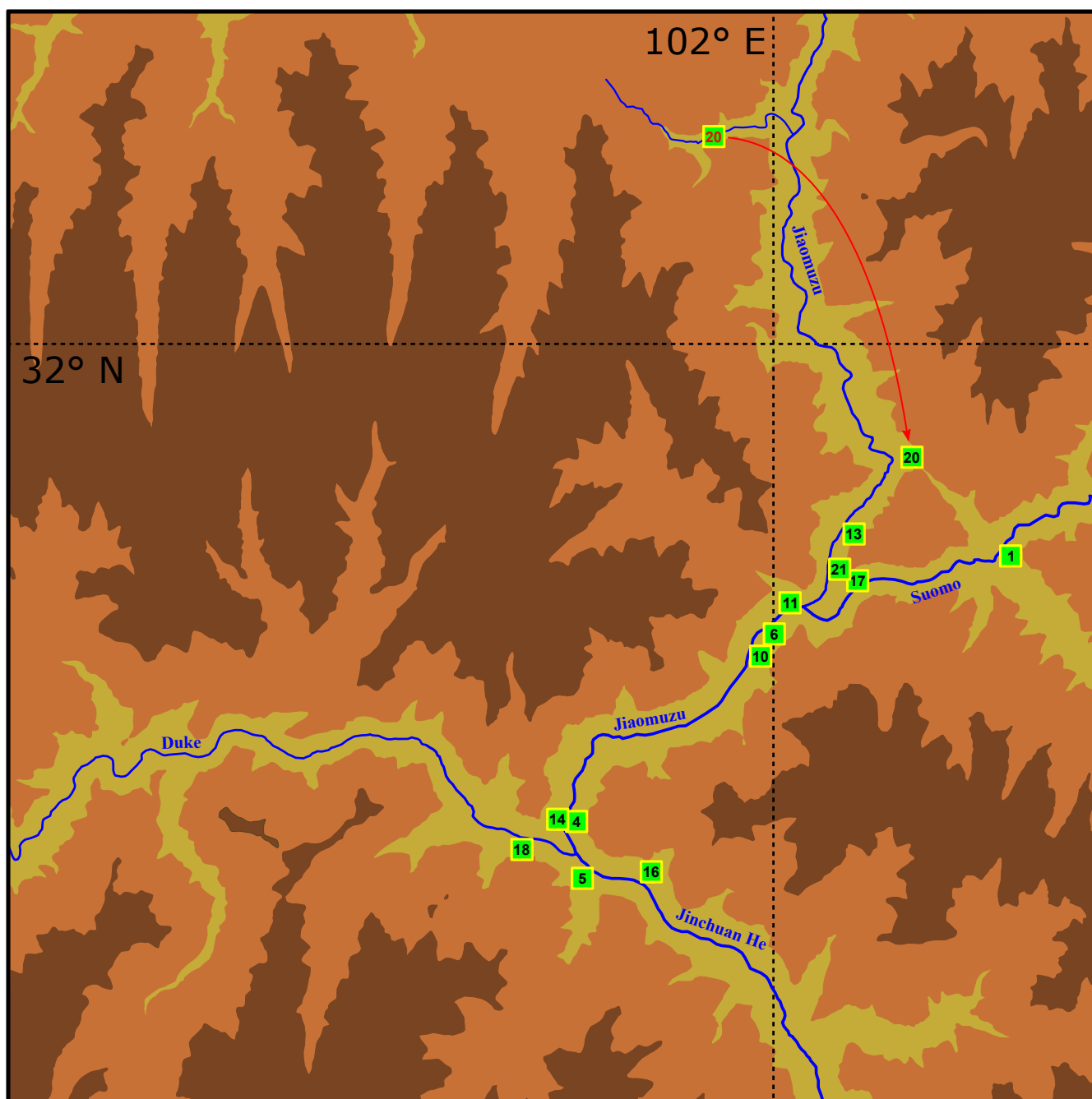


Scale: ~1:85,000

Map 2: Distribution range of *C. gansuensis* in Gansu and Sichuan.



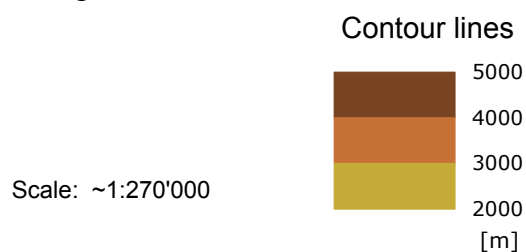




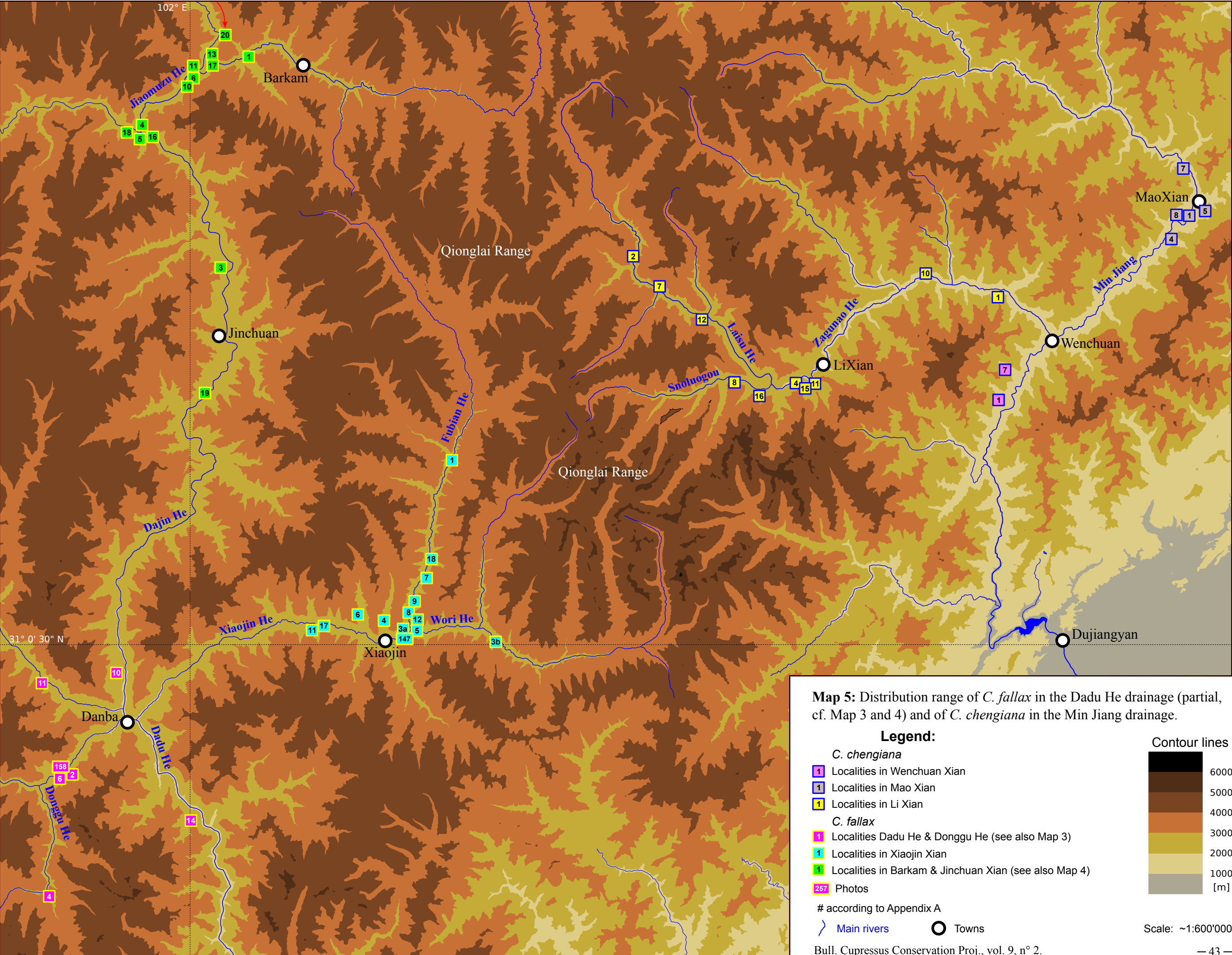
Map 4: Distribution range of *C. fallax* in the upper Dadu He drainage.

Legend:

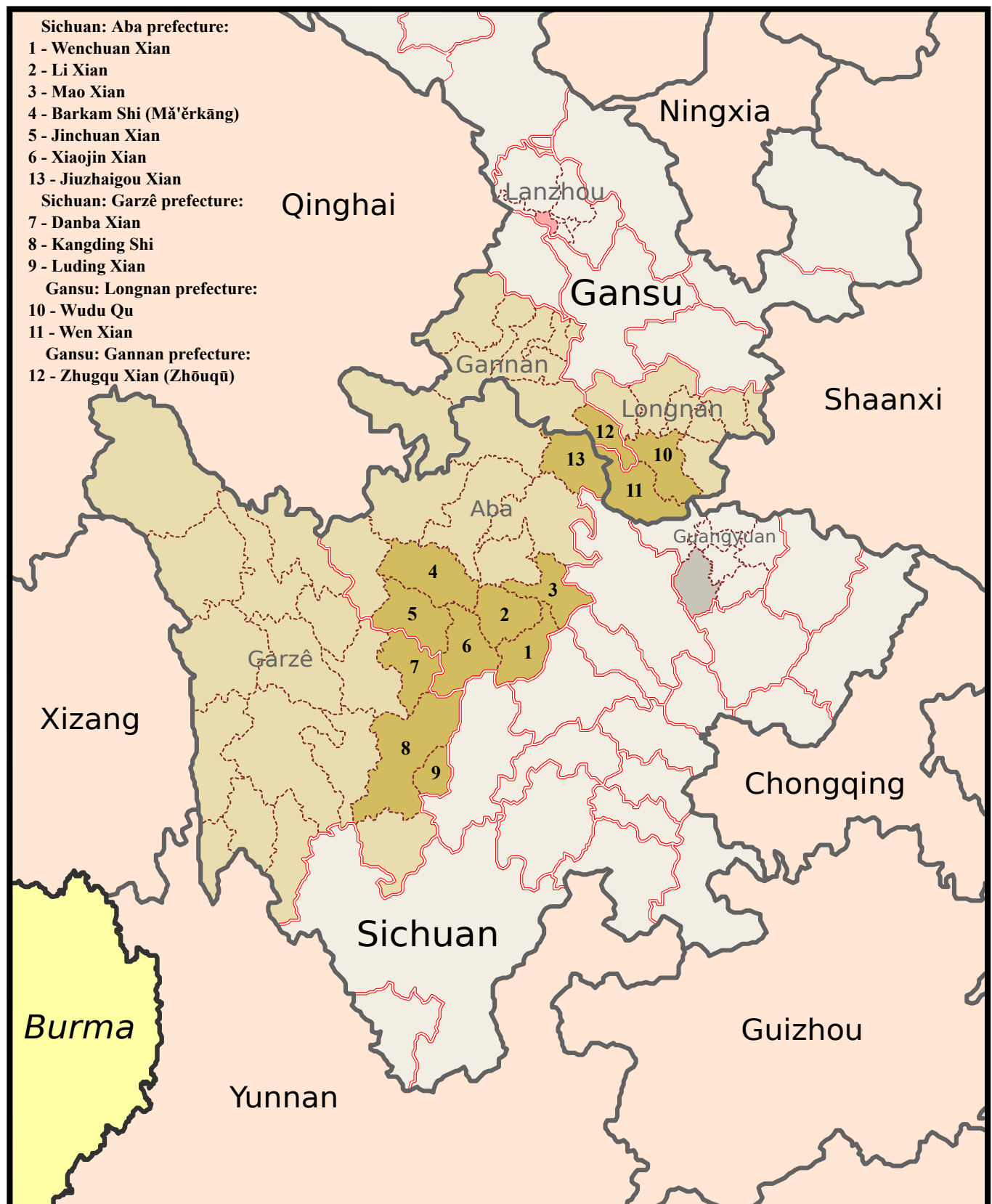
- 2 Localities in Barkam & Jinchuan Xian
 # according to Appendix A
- ~ Main rivers



Because of the building of a dam and the drowning of the trees that will occur in the near future, the *C. fallax* population #20 was relocated (Lin *et al.* 2019); 3.7% of the transplanted trees survived.



Map 6: Administrative map of Sichuan and Gansu - presence of the endemic cypresses.



Legend:

- Province border
- Prefecture border
- County border
- Prefecture with endemic Sichuan and Gansu cypresses
- County with endemic Sichuan and Gansu cypresses
- County of type of *Cupressus jiangeensis*
- Erroneous locality

0 500 km

Appendix A: List of available herbarium sheets and Wilson's historical photos.
(cf. p. 35 for the explanations.)

***Cupressus chengiana* Wenchuan Xian**

1	E.H. Wilson 798a K000088052 US01310432 x A	1908.11.00	Sichuan, west and near Wenchuan Xian, [formerly Miansi Zhen] alt. 1600 m. "In the valley of the Min River it is rare and we have no knowledge of this tree east of this district." (Sargent 1914: 55.) around 31°22'45"N, 103°29'23"E Paratype of <i>Cupressus chengiana</i> S.Y.Hu. Type of <i>Cupressus chengiana</i> var. <i>wenchuanhsiensis</i> Silba
2	F.T. Wang 21738 KUN0133946 PE00013021 LBG00059898	1930.07.19	Sichuan, [North of] Wenchuan Xian, temple ground, 1700 m. Tree 100 ft, DBH 5 ft, Bark brown, branchlets brown. (KUN ref. label)
3	W.C. Cheng 2066 A00022476 E00182051 BM000546887 K000088054 PE00013349 PE00013191 US00012089 IBSC0015839 CAS0213752 x SYS00001484	1930.11.02	Sichuan, N.W. Wenchuan Xian, [formerly Miansi Zhen] "W. and near Ouen-tchouan, 1600-2100 m" (Cheng 1939). Type of <i>Cupressus chengiana</i> . around 31°22'45"N, 103°29'23"E
4	W.C. Cheng 2073 P01585737 PE00013012 IBSC0015717 IBSC0015718 E00182045 x K000088060 x SYS00001483 A	1930.11.02	Sichuan, NW Wenchuan Xian, [formerly Miansi Zhen] "W and near Ouen-tchouan, 1600 - 2100 m" (Cheng 1939). around 31°22'45"N, 103°29'23"E
5	T.T. Yu 2712 PE00019352 IBSC0015723 x IBSC0015658 x IBSC 0015654 CQNM 0000362 CQNM 0000361 CQNM 0000360	1933.11.15	Sichuan, Wenchuan Xian, [Mt.] Tongling Shan 铜陵山, 2100 m. Side of wheat field, very abundant. Tree 60 ft, DBH 2 ft. Bark brownish gray, long splitting. Leaf dark bluish-green scaly. Flower male in bud. Fruit dark bluish green, cone scale peltate. [according to JH database "coll. T.T.Yü", it is the mountain behind Batukan Cun (village), N.W. and near Mianzi Zhen] ~ 31°22'45.0"N, 103°29'23.7"E
6	W.C. Cheng 3435 PE00013000 CQNM0000355	1933	Sichuan, (label) [From Wenchuan by compiling the collection numbers and deduction from the previous and following numbers.]
7	Feng 2017 et al. x	2017	Sichuan, Wenchuan Xian, 1533 m 31°25'59.0"N, 103°30'11.0"E

***Cupressus chengiana* – Mao Xian**

1	E.H. Wilson 2105 K000088056 US01310431 A ? Photo Z-84	1908.05.25	Sichuan, Min valley, near Mao-chou [Xian], [near Fengyi Zhen], arid regions, 1800 m, rare. (Sargent 1914: 55) [According to previous photos, it's in the immediate vicinity of Fengyi, in the courtyard of a house.] ~ 31°40'20"N, 103°50'40.7"E Paratype of <i>Cupressus chengiana</i> S.Y.Hu
2	W.C. Cheng 3321 P01585738 P01585739 PE00013007 PE00013008 PE00012998 N906008787 NK000128 WUK0000045 NK000129 CQNM0000357 US02070146 x BM	1931.09.21	Sichuan, S of Mao Xian, [S of Fengyi Zhen], 1600 m. "to the S of Mao-Chien, it forms pure forests on the rocky slope." (Cheng 1939: 91).
3	Sichuan plant team 2823 CDBI0009167 CDBI0009165 CDBI0009166	1959.06.21	Sichuan, Fengyi Zhen, Mao Xian county town, 2300-2400 m. not very abundant, SW dry shaded slopes, black earth. H 7-10 m, red-brown bark, green rounded leaves, green mature cone, scale with prominent umbo.
4 x	Pang 2006	2006	Sichuan, S of Mao Xian, [S of Fengyi Zhen], 1685-1730 m. 31°38'24.00"N, 103°48'36.00"E Notes: H 3.10 m, DBH 4 cm.
5 x	Hao <i>et al.</i> 2006	2006	Sichuan, Mao Xian, 1690 m. ~31°40'12.0"N, 103°53'24.0"E
6 x	Feng <i>et al.</i> 2017	2017	Sichuan, Mao Xian, 1700 m. 31°38'25.0"N, 103°48'22.0"E
7 x	Zhang <i>et al.</i> 2017	2017	Sichuan, Mao Xian, 1700 m. 31°44'52.7"N, 103°50'03.0"E
8 x	Li <i>et al.</i> 2020	2020	Sichuan, Mao Xian, 1500–1938 m. 31°40'25.2"N, 103°49'26.9"E
9 x	Li <i>et al.</i> 2020	2020	Sichuan, Mao Xian, 1742 m. 31°38'23.5"N, 103°48'21.0"E

***Cupressus chengiana* – Li Xian**

1	F.T. Wang 21700 KUN 0133945 NAS00163441 NAS00163451 PE00002532 LBG00059897 x A	1930.07.10	Paratype of <i>Cupressus chengiana</i> Sichuan, E of Li Xian [to this date, East of Xuecheng Zhen], in temple ground, tall tree, 80ft, 5ft in diam., branchlets brown, bark brown (KUN0133945 ref. label). [According to JH database "F.T.Wang collections, 1930", it is near the village of Gucheng Cun, in the Zagunao river valley.] near 31°33'08.3"N, 103°29'08.3"E
2	T.T. Yü 2483 PE00013004 x IBSC0015659 x IBSC0015652 x CQNM0000363 x CQNM0000359	1933.08.12	Sichuan, Li Xian, downstream of Erdaoqiao 二道桥, 2300 m, mnt. valley, open place, tree 40 ft, immature cones. ~31°36'24.4"N, 102°49'00.3"E
3	Y.R. Kuo 98 x SZ00016187 SZ00016195 x SZ00016188	1943.08.14	Sichuan, Li Xian, 2550 m (SZ00016195 ref. label) <i>C. chengiana</i> det. by C.C.Yang (1974.12.10)
4	C.Ho & C.L.Chow 13964 PE00013010 NAS00163442 SZ00017317 IBSC0015719 SHM0002884	1952.9.12	Sichuan, Li Xian, forest of Huangtupo 黄土坡 31°24'35.1"N, 103°06'46.2"E
5	C.Ho & C.L.Chow 13978 PE00013006 NAS00163439 SZ00016192 IBSC0015715 SHM0002885	1952.09.13	Sichuan, Li Xian, Erdaoqiao 二道桥, near the Erdaoqiao forest, H. 20 to 26 m. ~31°36'24.4"N, 102°49'00.3"E Cf. #2.
6	C.Ho & C.L.Chow 14122 NAS00163440 IBSC0015716	1952.09.19	Sichuan, Li Xian, (NAS00163440 ref. label) <i>C. chengiana</i> det. by Guan Zhongtian 管仲天 (1978.06.26)
7	He Diping 46534 SZ00017318 WUK0241840 x IBSC0015657 x SZ00016186 x SZ00016184	1956.09.07	Sichuan, Li Xian, Laisugou [valley], Dashibao 大石包, Paifanggou [a nearby valley], 2650 m 31°33'38.8"N, 102°51'38.1"E
8	He Diping 46771 SZ00016194 SZ00016191 x SZ00016196 x SHM0002881	1956.10.09	Sichuan, Li Xian, Suoluogou [valley], Zhuangfang [Cun] 庄房村 2250 m. 31°24'51.7"N, 103°00'27.1"E
9	He Diping 46883 SZ00016193 PE00013009 x SZ00016190	1956.10.14	Sichuan, Li Xian, Suoluogou [valley], Erdaoqiao 二道桥, 2200 m. [Inconsistent data]

x	IBSC0015656		
10	D.P. Little 861 E00190667 E00190651	2002.09.01	Sichuan, E. of Li Xian, Muka Cun 木卡乡, Zagunao river, 1780 m. 31°34'39.3"N, 103°21'51.2"E (GPS from label).
11	Pang <i>et al.</i> 2006	2006	Sichuan, Li Xian, 2060 m 31°24'36.0"N, 103°08'24.0"E
12	JQ Liu 1913	Xu <i>et al.</i> 2010	Sichuan, Li Xian, 1600-2100 m. Wild. 31°30'00.0"N, 102°56'00.0"E
13	TB-07022	Xu <i>et al.</i> 2010	Sichuan, Li Xian, 1954 m. Wild. 31°24'32.4"N, 103°06'55.2"E
14	Liu <i>et al.</i> 2011	2011	Sichuan, Li Xian, Putouxian, 1910 m, 2020 m, 2050 m and 2080 m.. Sichuan, Li Xian, 1920 m and 1980 m. Cf. #4, #11, #15.
15	Feng <i>et al.</i> 2017	2017	Sichuan, Li Xian, 2100 m. 31°24'14.0"N, 103°08'02.0"E
16	Li <i>et al.</i> 2020	2020	Sichuan, Li Xian, 2106 m. 31°23'28.8"N, 103°03'40.8"E

Cupressus fallax - Dadu He et Donggu He

1	E. H. Wilson 3012 (Veitch exped.) P06489918 K000088057 BM013399332	1904.07.00	Sichuan, "valley of Tung river" [Dadu He], dry region, 1300 m same locality as <i>Wilson 2106</i> , [1300 m] (Sargent 1914: 55) Tree 40 ft. <i>Culta</i> , 4000 ft, [1219 m] (label) ~ 29°53'06.9"N, 102°12'59.7"E
2	E. H. Wilson 2106 E00182050 K000088055 BM000799203 US599473 A Photo Z-157 Photo Z-158 Photo Z-252 Photo Z-256 Photo Z-257 Photo Z-258 Photo Z-259	1908.07.00 1908.07.02 1908.07.02 1908.07.30 1908.07.31 1908.07.31 1908.07.31 1908.08.01	Type of <i>Cupressus fallax</i> Franco (BM) Sichuan, [W. of Danba, E. of Kangding, Wasi Gu, near Luding.] Tung river valley, [Dadu He] 1300-2600 m (Sargent 1914: 55). W. Danba, Donggu He valley, Jingbei Cun [village], 2200 - 2600 m, 30°47'36.6"N, 101°46'33.2"E E. of Kangding, Wasi river, 瓦斯沟 ca. 1470 m ~ 30°04'26.5"N, 102°08'55.5"E "near" [south] of Luding, Dadu He valley, ca. 1300 m ~ 29°53'06.9"N, 102°12'59.7"E Photo Z-258 shows <i>Alnus cremastogyne</i> Burkill, in bed of the Dadu He, at same altitude as photo Z-256, 257, near the same locality.
3	W.C.Cheng 735 P01585740 PE00013019 N906008786 LBG00059896 NAS00163443 LBG00059899 *	1930.04.23	Sichuan, to the East and near Kangding, 2000-2600 m, isolated. (Cheng 1939: 91) [It points to the valley of the Wasi Gu, downstream of Kangding city.] ~ 30°03'23.0"N 101°58'59.4"E (3a) ~ 30°05'02.0"N 102°04'01.7"E (3b) * stored as <i>W.C.Cheng 1135</i> in the CVH
4	W.C.Cheng 1895 K000088061	1930.09.25	IBSC label says "N.E. Tachienlu" [Kangding], according to JH database "Cheng collections", it is in the S. of Danba Xian,

x	IBSC0015721 SYS00001435 A		on the N. slope of the Dapaoshan in the neighbourhood of Maoniu Cun village, Donggu He valley. There I saw specimens in pots in 2011 (JH). ~30°36'00.9"N, 101°44'08.7"E [± 2800 m]
5 x x x	Harry Smith 13387 PE00047320 E00182047 S-C-5714 NY03090917 BM013399331 MO-055646 A	1934.11.13	Sichuan, E. of Kangding city, Wasi River 瓦斯沟, alt. ca. 1500 m. Solitary tree near a Tibetan house. (label) ~30°04'31.4"N, 102°09'47.6"E
6	K.L.Chu 7836 (PE under 2836) PE00013013 NAS00163436 IBSC0015727	1940.08.24	Sichuan, Danba Xian, W. Danba city, Donggu Xiang, Donggu He valley. On home yard. Tree to 30 m high. Bark purplish whitish grey, young branchlets reddish, leaves green. Common. Cones immature (PE00013013 ref. label) ~30°47'20.2"N, 101°45'17.2"E (= Donggu Xiang municipality)
7	Sichuan plant Team 05325 CDBI0009139 CDBI0009138 CDBI0009168 PE00013014	1974.08.29	Sichuan, Kangding Shi, Kongyu Xiang, Bashegou Forest farm, trading centre, 1850 m. (label) Found on Sichuan map ISBN 7-80544-660-1/k.63 (page 131). ~30°27'04.2"N, 102°06'36.0"E
8 x	Pan Zhigang Antibes <i>s.n.</i>	1981	Cult. in INRA Antibes, France, grow from original wild collection in China, Sichuan, Kangding.
9 x	Zhao Zhen-Ju 113376 K000088063 E00182049 PE01554351 SZ00016201 SZ00016198	1981.04.25	Kangding Shi, Pengta Xiang, "Zhuan jing gou--" [prayer wheel], at the foot of the mountain at 2200 m. (original label SZ00016201) Exact place not located. ~30°25'40.2"N, 102°17'04.7"E
10 x	Pang <i>et al.</i> 2006	2006	Sichuan, Danba, 2310 m. ~30°57'36.0"N, 101°52'12.0"E
11 x	Pang <i>et al.</i> 2006	2006	Sichuan, Danba, 2310 m. ~30°56'32.8"N, 101°43'47.2"E, corrected 4 km to the NE.
12 x	JQ Liu 2691	Xu <i>et al.</i> 2010 Lu <i>et al.</i> 2013	Sichuan, "Danba", (30°07.84'N 102°10.43'E), 1680 m. (in Xu <i>et al.</i>) [These coordinates points to NE of Kangding city, at ca. 1400 m.] 30°07'50.4"N, 102°10'25.8"E
13 x	Liu <i>et al.</i> 2011	2011	Danba Xian, Niegaxiang, 2270 m. Cf. #10. Danba Xian, Geshizhaxiang, 2310 m. Cf. #11.
14 x	Li <i>et al.</i> 2020	2020	Sichuan, Danba, 2211 m 30°42'57.2"N, 101°59'41.5"E

***Cupressus fallax* – Xiaojin Xian**

1	F.T. Wang 21323 NAS00163444 WUK0044358 IBSC0015706 KUN0133943 LBG00059900 PE00013020 PE00013011	1930.06.16	Xiaojin Xian, ascending to "Fu-pien Hsien", 2750 m [Fubian river valley], abruptly slope down to stream, small tree, branchlets lustrous grey brown. (label) ~ 31°17'06.8"N, 102°28'47.2"E (approximate).
x	A		
2	T.T. Yu 2435 IBSC0015726 IBSC0015712 IBSC0015660 IBSC0015653 PE00012999 CQNM0000356	1933.07.28	Sichuan, "Mengkong-hsien" [Xiaojin Xian], 2900 m; mountain slope open place, tree 20-40 ft, branchlets greyish purple, smooth. Leaf dark bluish green. Fruit green to brown, woody cone, common along the road-side (PE00012999 ref. label)
x			
x			
3a	H.C.Chow 1011 NAS00163445 Photo Z-147	1939.10.23 1908.06.27	Sichuan, Xiaojin Xian, on the slope of the Mǎ'ān qiáo [Ma'an Bridge], 马鞍桥. 31°01'8.02"N, 102°24'20.59"E E.H.Wilson, junction of Fubian (left) and Wori Rivers. The cypresses are on the slope above the bridge on the left. Cf. recent photos with the cypresses on p. 55-56.
3b	Zhang Xiufu & Ren Youxi 5852 SZ00017319 PE00013016 CDBI0009173 CDBI0009172 CDBI0009171	1958.07.09	Xiaojin Xian, on the mountain slope surrounding "Muya qiao", [Muya Cun], 2800 m [Wori River valley]. Young branchlets brown. Tree H. 5 m, smooth brown-black cones, seeds with narrow wings. (CDBI0009171 ref. label) ~ 30°59'58.0"N, 102°34'08.4"E
4	Zhang Xiufu & Ren Youxi 6469 PE00013015 CDBI0009174 CDBI0009176 SZ00016189 IBSC0015709 IBSC0015708	1958.08.09	Xiaojin Xian, Chongdegou forest, 崇德沟, 2500 m [Chongdegou valley which leads into the Xiaojin town] Tree H. 15 m, scaly yellow-green leaves, big smooth green or brown cones. Green young shoots, old yellow-brown shoots. (PE00013015 ref. label) ~ 31°01'47.7"N, 102°21'22.1"E (approximate, according to altitude, with a 2 km possible variability).
5	Anonymous 9822 CDBI0009177 CDBI0009170 CDBI0009175 PE00063412 IBSC0015713	1975.08.02	Xiaojin Xian, near Menguqiao 猛固桥, 2400 m [mouth of the Wori river], shrub, dry place, H. 8-12 m, DBH 10 cm, common. (IBSC 0015713 ref. label) ~ 31°01'09.6"N, 102°24'34.1"E
6	Sichuan Academy of Grass Science 9631 HON001111	1978.08.14	Sichuan, Xiaojin Xian, xīnmín gōngshè 新民公社, at yī dàduì 一大队, alt. 2000 m. [label] = Sichuan, Xiaojin Xian in former canton of Xinmin, now Xinming Cun 新民村, alt. 2000 m. Altitude is too low for this canton at ~ 31°02'30.9"N, 102°18'14.0"E .
7	Chamberlain, Cox	1989.05.30	Sichuan, 15 km from Xiaojin to Maerkang [Barkam Xian]. [through

	& Hutchison 4044 E00182048		the Fubian valley] Cliffs and rocky slopes on sides of gorge, 2500 m. Tree to 20 m. (E00182048 ref label) *[Oblongs cones] ~ 31°06'15.9"N, 102°25'51.0"E (measured 15 km by road from Xiaojin)
8	Howick & McNamara 2285 E00420843	2000.09.19	Cult. in RGE, grow from original wild collection. Xiaojin Co.[Xian], above "Hubian" [Fubian] river, 2445 m. Frequent in sun on dry sandy gravelly loam in a scattered population in a vertical east facing part of a hot dry valley with <i>Buddleja crispa</i> , <i>Rosa soulieana</i> and <i>Berberi sp.</i> (label) 31°03'29.0"N, 102°24'09.0"E (GPS from label).
9	Qin Haining et al.17091 x PE01812403	2004.07.08	~ 31°04'15.6"N, 102°24'34.4"E (approximate, shows Shuangbai Xiang village, is in the neighbourhood, likely higher in the Fubian river valley)
10	Chang Chin-Sung et al.SI0130 PE01523209	2004.07.08	Eastern part of Zhegushan, border between Barkam and Lixian, ca. 18 km from "Matang" alt. 2475 m (label) 31°03'42.8"N, 102°24'22.0"E (label). * GPS show the Fubian valley. Locality and GPS do not match at all. Coordinates look correct: see PE01812403 above, same date and Qin Haining belongs to the Chang Chin-Sung team. The altitude and the coordinates matching perfectly at 2475 m. Between #8 and #9.
11	Pang et al. 2006 x	2006	Sichuan Xiaojin Xian, 2310 m. ~ 31°01'12.0"N, 102°13'12.0"E
12	Pang et al. 2006 x	2006	Sichuan Xiaojin Xian, 2485 m. ~ 31°03'00.0"N, 102°24'36.0"E
13	Hao et al. 2006 x	2006	Sichuan Xiaojin Xian, 2420 m. ~ 31°01'48.0"N, 102°14'24.0"E
14	LJQ-256 x KUN1405150 x HNWP0282696 x HNWP0282697	2011.09.10	Sichuan, Xiaojin Xian (CVH), in Tian Xinmin et al. (2011).
15	JQ Liu 2406 x	2010 Xu et al.	Sichuan, Xiaojin Xian, 30°32.00'N, 101°35.00'E, 3780 m *(coordinates and altitude erroneous, they point to Dawu Xian).
16	Liu et al. 2011 x	2011	Xiaojin Xian, Bajiaoxiang, 2570 m. Cf. #7, #15. Xiaojin Xian, Shuangbaixiang, 2390 m, 2410 m, 2420 m. Cf. #8, #9, #10. Xiaojin Xian, Zhailongxiang, 2238 m, 2247 m, 2310 m, 2350 m. Cf. #14.
17	Feng et al. 2017 x	2017	Sichuan, Xiaojin Xian, 2200 m. 31°01'43.0"N, 102°14'17.0"E (GPS in Feng et al. 2017)
18	Li et al. 2020 x	2020	Sichuan, Xiaojin Xian, 2571 m. 31°09'47.4"N, 102°26'36.8"E

Cupressus fallax – Barkam Shi (Mǎ'ěrkāng) / Jinchuan Xian

1	Li Puxiong I0563 CAF00001309	1958.07.15	Sichuan, Barkam Shi, Songgang Zhen, 2400 m. ~ 31°55'09.4"N, 102°06'20.2"E [= Songgang]
2	Wu Zhonglun 33278 CAF00001312	1958.07.18	Sichuan, Barkam Shi, 2600 m

3	Jiang Shu 01084 PE00013017 SZ00016203 SZ00016202	16.06.1959	Sichuan, Jinchuan Xian, north of "Gengzi" 庚子 [Shangengzi Cun 山埂子村], 2340 m (PE00013017 ref. label) ~ 31°31'31.9"N, 102°03'05.5"E *[SZ00016203 & SZ00016202 = oblongs cones!]
4	Plant team 9554 CDBI0009169 CDBI0009178 CDBI0009164 PE00063548 IBSC0015714	01.08.1975	Sichuan, Barkam Shi, "Baiwan qū" [Baiwan Xiang] "Rè zú" bridge [not found], 2380 m. (CDBI0009164 ref. label) ~ 31°48'55.1"N, 101°54'32.0"E *(points to Baiwan Xiang city)
5	Hengduanshan plant team 4059 PE02046055 PE02046056	11.06.1983	Sichuan, N. Jinchuan Xian, close to Ke'eryin 可尔因, 2400 m, at the foot of the slope, little wooded, H. 10-12 m. 31°47'42.7"N, 101°54'50.3"E
6	Lang Kai-Yong et al. 2116 PE01057297 PE01057299	02.07.1983	Sichuan, 24 km from Barkam to Jinchuan, 2520 m, cypress forest. ~ 31°53'12.0"N, 101°59'48.7"E (measured 24 km by the road from Barkam centre).
7	G.Miehe & U.Wündisch 94-4707 K000088058 x GOET (Farjon)	01.10.1994	Upper Dadu He basin, Dajin Chuang [river] Gana - Barkam, 2250-3000 m, In secondary thickets. 31°56'00.0"N, 101°53'00.0"E (GPS label K000088058) * * the GPS gives an altitude of 4350 m. * Gana is a hamlet at 112 km to the W of Barkam city, at 31°59'09.2"N, 101°00'48.8"E (Gana). Gana-Barkam does not indicate the place of harvest, but a stage. The approximate GPS coordinate points 18 km above the Dajin Chuang river, that mean the Dajin - Jiaomusu river population in N. Jinchuan Xian - S.W. Barkam Shi
8	G.Miehe & U.Wündisch 94-4708 K000088059 x GOET in Farjon	01.10.1994	same as above
9	G. & S.Miehe & U.Wündisch 94-473-23/04 <i>Normandina pulchella</i> (Borrer) Nyl. Link	1994.10.02 lichen	In Additions to the lichen flora of the Tibetan region, by Walter OBERMAYER, p. 504: NW Sichuan, Upper Dadu He, Dajin Chuang, Gana to Barkam, 31°55'N 102°03'E * 42° SW-exposed <i>Cupressus chengiana</i> forest, 1994-10-02, G. & S. Miehe (94-473-23/04) & U. Wündisch. * this approximate GPS coordinate points into the Suomo He . valley in Barkam Shi a tributary of the Jiaomusu river.
10	Howick & McNamara 2309 x RBGE 20050247 E00420843	2000.09.21	Cult. in RGE, grown from wild collection. "Mianyang Pref." [error!] "Somo River" [Suomo River], 2455 m. locally frequent in sun on dry sandy gravelly loam on a vertical north-west facing bank. 31°52'53.0"N, 101°59'26.0"E (GPS from E00420843). [in Barkam !]
11	Pang et al. 2006 x	2006	Sichuan, Barkam Shi, 2560 m. ~ 31°54'00.0"N, 102°00'00.0"E
12	Hao et al. 2006 x	2006	Sichuan, Jinchuan Xian, 2280 m. Coordinates don't match with altitude. ~ 31°27'36.0"N, 101°58'48.0"E
13	Jianquan Liu	2010	Sichuan, Barkam Shi, 2417 m.

x	TB-07029	Xu <i>et al.</i>	31°55'43.2"N, 102°02'01.2"E
14	He X. <i>et al.</i> SCU-10-228 KUN1405151	2010.09.13	He Xingjin, Ma Xiangguang, Gao Peng <i>et al.</i> Sichuan, Aba, Jinchuan Xian to 317 National Road Intersection, alt. 2321 m. 31°48'57.5"N, 101°54'12.0"E [label]. The geo-coordinates are in Barkam Shi.
15	Liu <i>et al.</i> 2011	2011	Maerkang Shi, Jiaomuzuxiang, 2390 m, 2400 m, 2560 m. Cf. #11. Maerkang Shi, Baiwanxiang, 2290 m, 2300 m, 2400 m, 2420 m, 2490 m, 2500 m, 2600 m. Cf. #4. Jinchuan Xian, Jimuxiang, 2195 m, 2200 m, 2205, 2215m, 2230 m, 2260 m, 2320 m, 2380 m. Cf. #14.
16	Lu <i>et al.</i> 2014	2014	Jinchuan 2400-2470 m. 31°47'27.6"N, 101°56'28.8"E
17	Feng <i>et al.</i> 2017	2017	"Maerkang" [Barkam Shi] 2500 m. 31°54'16.0"N, 102°02'13.0"E
18	Feng <i>et al.</i> 2017	2017	Jinchuan, 2300 m. 31°48'24.0"N, 101°53'05.0"E
19	Xu <i>et al.</i> 2017	2017	Jinchuan Xian, 2128 m. 31°23'31"N, 102° 1'40"E
20	Lin <i>et al.</i> 2019	2019	Sichuan, Barkam Shi, ca. 2700 m. Relocated station → ~32° 4'51.00"N, 101°58'17.00"E
21	Li <i>et al.</i> 2020	2020	Sichuan, Barkam Shi, 2410 m. 31°54'37.8"N, 102°01'47.8"E

Cupressus gansuensis – Gansu

1	F.N.Meyer 1981 K000088053 P06489917 NY00345678 MO-055646 A	1914.10.18	Type of <i>Cupressus chengiana</i> var. <i>kansuensis</i> Silba Gansu, Longnan pref, Wudu Qu, near "Chu-kun" [Jiaogong Zhen 角弓镇]. ~33°33'50.0"N, 104°38'46.2"E Paratype of <i>Cupressus gansuensis</i> .
2	J.F.Rock 12073 E00182046 P01585736 K000088062 A M-10877 photo M-10877 photo	1925.04.07	Gansu, Longnan pref, S. of Wudu Qu, beyond granite gorge. Notes: locality and date according to the information on Rock's photos, tree 40-50 ft high [12,2 m - 15,25 m], no. 12073. Photo by J. F. Rock, 7 April 1925. Paratype of <i>Cupressus gansuensis</i> .
3	W.Y.Hsia 6368 WUK0080132	1939.08.23	Gansu, Longnan pref, Wudu Qu, Hanwang Zhen, "Hanwang si" [probably a temple] ~33°20'40.4"N, 105°00'54.6"E
4	W.Y. Hsia 6389 PE00013003 WUK0093867	1939.09.03	Gansu, Longnan pref, Wudu Qu, Shimen Xiang, 1200 m, tree, H. 20 m. ~33°28'45.0"N, 104°44'28.0"E On sheet: C.D. Chu, Zhu Zhengde, 1973: <i>C.kansuensis</i> Cheng
5	C.K.Chow 47 NAS00163435 NAS00163434	1945.10.00	Gansu, Bailong Jiang valley.

6	C.K.Chow NAS00163438	1945.11.00	Gansu, Gannan pref, Zhugqu Xian, Bailong Jiang valley.
7	C.K.Chow NAS00163437	1945.11.00	Gansu, Bailong Jiang valley.
8	T.P.Wang 14286 PE00013002 HIB0088916 WUK0049974	1951.07.11	Gansu, Gannan pref, Zhugqu Xian, opposite Hanban Cun [village], 2000 m. Two years old shoots, yellow-brown, tree H. 15 m. ~33°53'17.0"N, 104°10'38.3"E Type of <i>Cupressus gansuensis</i> (PE) On sheet: C.D. Chu, Zhu Zhengde, 1973: <i>C.kansuensis</i> Cheng
9	T.P.Wang 14304 WUK0049417 PE00013001	1951.07.11	Gansu, Gannan pref, Zhugqu Xian, close to Hanban Cun [village], Bailong Jiang, ravine at 1380 m. ~33°52'24.9"N, 104°10'31.4"E On sheet: C.D. Chu, Zhu Zhengde, 1973: <i>C.kansuensis</i> Cheng
10	Wei Zhiping 2828 WUK0108041 WUK0404776	1958.10.12	Gansu, Longnan pref, Wen Xian, on the road. toward Shangde Zhen, 900 m, on the side of the road. ~32°54'10.0"N, 104°45'51.1"E
11	Zhang Zhiying 1247 WUK0143895 LBG00059880	1959.05.03	Gansu, Longnan pref, Wudu Qu, Luotang Zhen, 1300 m, on the slopes, "Yangniao gou" [stream not found] ~33°03'58.7"N, 105°16'07.5"E
12	Zhang Zhiying 4310 WUK0152604 WUK0367704	1959.06.10 1959.06.14	Gansu, Longnan pref, Wudu Qu, on the side of the road close to Toufang Cun [village], 1330 m 33°15'01.2"N, 105°06'53.2"E
13	Zhang Zhiying 9735 WUK0151315 WUK0372133 HNWP17153	1959.07.17	Gansu, Longnan pref, Wen Xian, side of the road, from Liujiaping Xiang to Guankou Zhong, 1500 m, shrub. ~32°47'04.8"N, 104°48'01.5"E
14	Zhang Zhiying 9915 WUK0144724	1959.07.30	Gansu, Longnan pref, Wen Xian, Liujiaping Xiang, Shengou He [stream], 1640 m. ~ 32°44'15.40"N, 104°47'17.80"E
15	Zhang Zhiying 9964 WUK0144736 WUK0372544	1959.07.30	Gansu, Longnan pref, Wen Xian, Liujiaping Xiang, Shengou He [stream], 1740 m, on the side of the road, on a hillside, shrub. ~32°43'30.6"N, 104°46'13.7"E
16	Zhang Zhiying 10387 WUK0146437 WUK0372828	1959.08.06	Gansu, Longnan pref, Wen Xian, Danbao Xiang, plage of the Danbao river, 1250 m, side of the road, side of the stream, H. 2 m, shrub. ~32°51'30.8"N, 104°46'49.8"E
17	Guo Benzhaoh 5486 WUK0396584 WUK0231729 x HIB0085028	1964.07.22	Gansu, Gannan pref, Zhugqu Xian, "? bǎn pō" 1700 m, H. 7 m.
18	Wang 27 N.W.N. x RBGE 19912949	1994	Cult. in RGBE, grow from original wild collection in Gansu. Wudu [Longnan pref, Wudu Qu].
19	Bailongjiang Exped. 712 PE01561030	1998.07.25	~33°26'30.8"N, 104°48'44.3"E - Note: E103°55'86'' N34°00'02'' on the label, but aberrant coordinates.
20	Hao <i>et al.</i> 2006 x	2006	Gansu, Longnan pref., Wen Xian, 1100 m. ~32°57'00.0"N, 104°42'00.0"E
21	Hao <i>et al.</i> 2006 x	2006	Gansu, Gannan pref., Zhugqu Xian, 1850 m. ~33°48'36.0"N, 104°22'48.0"E

22	J.Q.Liu 2005007	2007	Gansu, Gannan pref, Zhugqu Xian, 1531 m. Wild.
x	Liujq 7014		33°52'16.2"N, 104°08'35.4"E
23	J.Q.Liu 2005016	2007	Gansu, Longnan pref, Wudu Xian, 1400 m. Wild (1397 m in I Flora)
x	Liujq 7016	Xu et al.2010	33°14.90'N, 104°59.15'E
24	TB-07014	2010	Gansu, Longnan pref, Wen Xian, 1025 m. Wild.
x	Jianquan Liu	Xu et al.2010	33°12.03'N, 105°02.13'E
25	J.Q.Liu 2736	2010	Gansu, Longnan pref, Wen Xian, 888 m. Wild.
x		Xu et al.2010	32°44.47'N, 104°54.45'E
26	Feng et al. 2017	2017	Gansu, Longnan pref, Wudu Qu, 1100 m.
x			33°31'30.0"N, 104°41'21.0"E
27	Feng et al. 2017	2017	Gansu, Gannan pref, Zhouqu Xian, 1600 m.
x			33°52'46.0"N, 104°07'10.0"E
28	Feng et al. 2017	2017	Gansu, Longnan pref, Wen Xian, 1100 m.
x			32°47'31.0"N, 104°49'23.0"E
29	Xu et al. 2017	2017	Gansu, Longnan pref, Wudu Qu, alt. 1397 m.
x			33°11'36.6"N, 105°13'18.0"E (Altitude does not correspond.)
30	Li et al. 2020	2020	Gansu, Gannan pref, Zhugqu Xian, 1521 m.
x			33°52'54.5"N, 104°08'09.4"E
31	Li et al. 2020	2020	Gansu, Longnan pref, Wudu Qu, 1634 m.
x			33°15'11.8"N, 104°59'01.4"E
32	Li et al. 2020	2020	Gansu, Longnan pref, Wen Xian, 1535 m.
x			32°49'21.8"N, 104°45'34.6"E
33	Li et al. 2020	2020	Sichuan, 4 km from the border with Gansu, Jiuzhaigou Xian, 1351 m.
x			33°06'56.8"N, 104°19'29.5"E

Fig. 1: Sichuan, Xiaojin Xian, on the slope of the Mǎ'ān qiáo [Ma'an Bridge]. Cf. Appendix A, #3a, p. 50.
Cupressus fallax are visible on the slope.



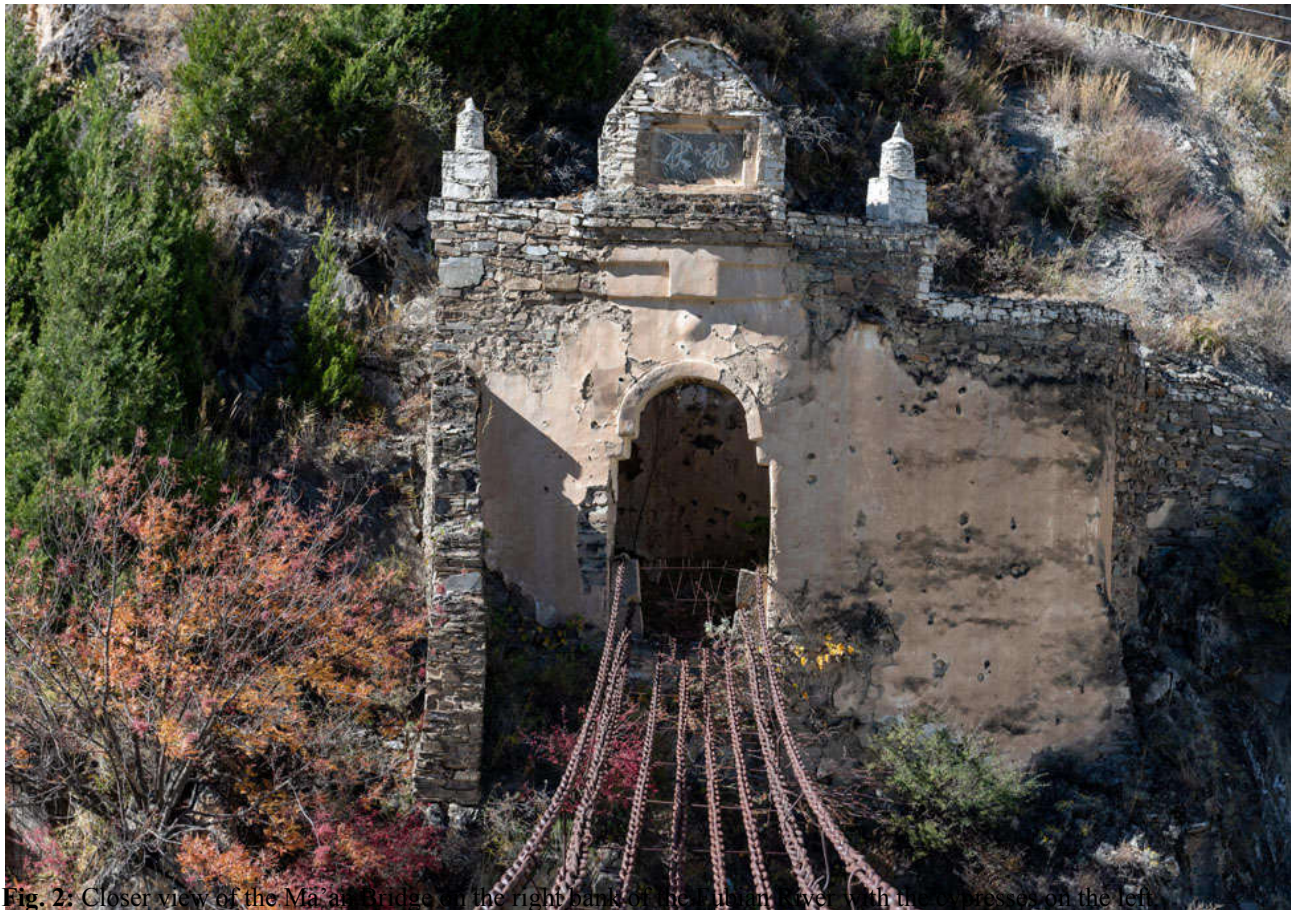


Fig. 2: Closer view of the Ma'an Bridge on the right bank of the Fushan River with the expressway on the left.

[Three photos](#): © and courtesy of M. Xiao Feixue.

Fig. 3: Larger view of the slope above the Ma'an Bridge (right) with several groves of *Cupressus fallax*.



Appendix B: Groves in the type locality of *C. gansuensis* (cf. Map 1, p. 38).

***C. gansuensis*, type population.**

1	Wei <i>et al.</i> 2019	2019	Gansu, Gannan pref., Zhugqu Xian, 1826 m, WN exposure. 33°53'45.2"N, 104°11'22.4"E
x			
2	Wei <i>et al.</i> 2019	2019	Gansu, Gannan pref., Zhugqu Xian, 1710 m, WN exposure. 33°52'32.2"N, 104°07'35.2"E
x			
3	Wei <i>et al.</i> 2019	2019	Gansu, Gannan pref., Zhugqu Xian, 1587 m, N exposure. 33°52'06.7"N, 104°08'46.9"E
x			
4	Wei <i>et al.</i> 2019	2019	Gansu, Gannan pref., Zhugqu Xian, 1920 m, NW exposure. 33°52'04.5"N, 104°11'58.6"E
x			
5	Wei <i>et al.</i> 2019	2019	Gansu, Gannan pref., Zhugqu Xian, 1652 m, SW exposure. 33°52'12.2"N, 104°09'56.5"E
x			
6	Wei <i>et al.</i> 2019	2019	Gansu, Gannan pref., Zhugqu Xian, 1620 m, SW exposure. 33°52'08.3"N, 104°10'34.4"E
x			
7	Wei <i>et al.</i> 2019	2019	Gansu, Gannan pref., Zhugqu Xian, 1738 m, WN exposure. 33°53'29.7"N, 104°11'04.0"E
x			
8	Wei <i>et al.</i> 2019	2019	Gansu, Gannan pref., Zhugqu Xian, 1727 m, N exposure. 33°52'12.4"N, 104°11'32.7"E
x			
9	Wei <i>et al.</i> 2019	2019	Gansu, Gannan pref., Zhugqu Xian, 1647 m, S exposure. 33°52'37.4"N, 104°07'17.8"E
x			
10	Wei <i>et al.</i> 2019	2019	Gansu, Gannan pref., Zhugqu Xian, 1523 m, S exposure. 33°52'27.4"N, 104°10'38.2"E
x			
11	Wei <i>et al.</i> 2019	2019	Gansu, Gannan pref., Zhugqu Xian, 1762 m, SE exposure. 33°53'49.3"N, 104°11'06.5"E
x			

Data from Wei *et al.* 2019: 118, Table 1.

List of Chinese herbaria mentioned in this issue:

CAF	Chinese Academy of Forestry, Beijing.
CDBI	Chengdu Institute of Biology, Chengdu, Sichuan.
CQNM	Chongqing Natural History Museum, Chongqing.
HIB	Wuhan Institute of Botany, Wuhan, Hubei.
HNWP	Northwest Institute of Plateau Biology, Xining, Qinghai.
HON	Sichuan Grassland Research Institute, Hongyuan, Sichuan.
IBSC	South China Botanical Garden, Guangzhou, Guangdong.
KUN	Kunming Institute of Botany, Kunming, Yunnan.
LBG	Lushan Botanical Garden, Lushan, Jiangxi.
N	Nanjing University, Nanjing, Jiangsu.
NAS	Jiangsu Institute of Botany, Nanjing, Jiangsu.
NKU	Nankai University, Tianjin. .
PE	Chinese National Herbarium, Beijing.
SCFI	Sichuan Academy of Forestry, Chengdu, Sichuan.
SHM	Shanghai Museum of Natural History, Shanghai. .
SYS	Zhongshan (Sun Yatsen) University, Guangzhou, Guangdong.
SZ	Sichuan University, Chengdu, Sichuan.
WUK	Northwestern Institute of Botany , Yangling, Shaanxi..

Appendix C: Cheng's collections in October and November 1930.

Cf. p. 27, the discussion on the type locality of *Cupressus chengiana*.

Coll. #	Herbarium code	Date	D	Determination	Locality on label
2000	A00146523	1930.10.10	10	<i>Gleditsia sinensis</i>	Sichuan, Tsingkihsien: Yingjing Xian
2000	IBSC0162770	1930.10.10	10	<i>Gleditsia sinensis</i>	Sichuan, Tsingkihsien: Yingjing Xian
2000	SYS00045216	1930.10.10	10	<i>Gleditsia sinensis</i>	Sichuan, Tsingkihsien: Yingjing Xian
2000	PE00326628	1930.10.10	10	<i>Gleditsia sinensis</i>	Tachienlu
2000	PE01114576	*	10	<i>Gleditsia sinensis</i>	Sichuan
2001	**				
2002	PE00017160	1930.10.13	13	<i>Juniperus chinensis</i>	Sichuan, Ya-chow : Ya'an
2002	LBG00059936	1930.10.03	13	<i>Juniperus chinensis</i>	Sichuan
2002	K000089533	1930.10.13	13	<i>J. chinensis</i> var. <i>chinensis</i>	Sichuan, Ya-chow : Ya'an
2002	E00237383	1930.10.13	13	<i>J. chinensis</i> var. <i>chinensis</i>	Sichuan, Ya-chow : Ya'an
2002	NAS00164320	1930.10.03	13	<i>Sabina chinensis</i>	Sichuan
2002	SYS00001570	1930.05.05	13	<i>Sabina chinensis</i>	Sichuan (CVH)
2002	IBSC0016630	1930.10.13	13	<i>Sabina chinensis</i>	Sichuan, Ya-chow : Ya'an
2003	E00240401	1930.10.06	6	<i>Alnus cremastogyne</i>	Sichuan
2003	LBG00066308	1930.10.06	6	<i>Alnus cremastogyne</i>	Sichuan
2003	IBSC0365848	1930.10.06	6	<i>Alnus cremastogyne</i>	Sichuan, S.E.Tachienlu (CVH)
2004	**		6		
2005	LBG00070336	1930.10.06	6	<i>Osyris wightiana</i>	Sichuan
2005	NAS00300770	1930.10.06	6	<i>Osyris wightiana</i>	Sichuan
2006	**				
2007	IBSC0570305	1930.10.07	7	<i>Caryopteris tangutica</i>	Sichuan, S.E.Tachienlu
2007	PE01265755	1930.10.07	7	<i>Caryopteris tangutica</i>	Tachienlu
2007	PE01265754	1930.10.07	7	<i>Caryopteris tangutica</i>	Sichuan, S.E.Tachienlu , 2200 m, written by Cheng.
2007	PE01265756	1930.10.07	7	<i>Caryopteris tangutica</i>	Sichuan: S.E.Tachienlu
2008	**		7		
2009	IBSC0262648	1930.10.07	7	<i>Firmiana simplex</i>	Sichuan, S.E.Tachienlu
2009	LBG00062844	1930.10.07	7	<i>Firmiana simplex</i>	Sichuan, S.E.Tachienlu
2009	PE01304039	1930.10.07	7	<i>Firmiana simplex</i>	Sichuan, S.E.Tachienlu
2010	IBSC0558551	1930.10.06	7	<i>Barleria cristata</i>	Sichuan, S.E.Tachienlu
2011	PE00322175	1930.10.07	7	<i>Albizia kalkora</i>	Tachienlu
2012	**				
2013	PE01508362	1930.10.12		<i>Ligustrum lucidum</i>	Tachienlu
2014	LBG00054516	1930.10.12		<i>Meliosma parviflora</i>	Tachienlu
2014	IBSC0426824	1930.10.12		<i>Meliosma parviflora</i>	Tachienlu (CVH)
2014	WUK09331	1930.05.14		<i>Meliosma parviflora</i>	Sichuan, (CVH)
2014	PE 01379014	1930.10.14		<i>Meliosma parviflora</i>	Tachienlu
2014	N103166045	1930.10.14		<i>Meliosma parviflora</i>	Chine (CVH)
2014	PE 01379023	*		<i>Meliosma parviflora</i>	Sichuan, Mingshan Hsien , 650 m. written by Cheng : Mingshan Xian .
2015	**				
2016	**				
2017	**				
2018	**				
2019	PE 00697193	1930.00.00		<i>Rostrinucula dependens</i>	Sichuan
2019	PE 00697170	1930.00.00		<i>Rostrinucula dependens</i>	Sichuan
2019	NAS00225794	1930.00.00		<i>Rostrinucula dependens</i>	Sichuan
2020	**				
2021	**				
2022	**				

2023	**				
2024	**				
2025	**				
2026	PE00163496	*		<i>Castanopsis ceratacantha</i>	Sichuan
2027	**				
2028	**				
2029	**				
2030	**				
2031	**				
2032	LBG00064269	1930.10.14	14	<i>Mahonia fortunei</i>	Sichuan
2032	NAS00315142	1930.10.14	14	<i>Mahonia fortunei</i>	Sichuan
2033	**				
2034	**				
2035	**				
2036	**				
2037	**				
2038	SZ00028415	1930.10.12		<i>Rhododendron fargesii</i> Franch.	
2039	WUK01109	1930.11.27	27	<i>Aphananthe aspera</i>	Jiangsu (CVH)
2039	WUK01107	1930.10.27	27	<i>Aphananthe aspera</i>	Sichuan (CVH)
2039	IBSC0332382	1930.10.27	27	<i>Aphananthe aspera</i>	Sichuan, Tachienlu (CVH)
2039	LBG00061421	1930.10.27	27	<i>Aphananthe aspera</i>	Sikang
2039	N 063037005	1930.10.27	27	<i>Aphananthe aspera</i>	Jiangsu (CVH)
2039	PE00674164	1930.10.27	27	<i>Aphananthe aspera</i>	Sichuan, Tachienlu
2040	**				
2041	**				
2042	**				
2043	**				
2044	**				
2045	**				
2046	**				
2047	A00231316	1930.10.29	29	<i>Acer amplum</i> ssp. <i>catalpifolium</i>	Sichuan, Northern Kuan-hsien (A): N. Dujiangyan
2047	IBSC0412856	1930.10.29	29	<i>Acer catalpifolium</i>	Sichuan, N. Kuan-hsien (CVH): N. Dujiangyan
2047	IBSC0412853	1930.10.29	29	<i>Acer catalpifolium</i>	Tachienlu (CVH)
2047	PE00898794	1930.10.29	29	<i>Acer catalpifolium</i>	Sichuan, N. Kuan-hsien: N. Dujiangyan
2047	PE00898784	1930.10.29	29	<i>Acer catalpifolium</i>	Sichuan, Tachienlu
2047	PE00898811	1930.10.29	29	<i>Acer catalpifolium</i>	Sichuan, N. Kuan-hsien: N. Dujiangyan
2047	PE00898810	1930.10.29	29	<i>Acer catalpifolium</i>	Sichuan, N. Kuan-hsien: N. Dujiangyan
2048	**				
2049	**				
2050	**				
2051	**				
2052	**				
2053	**				
2054	**				
2055	LBG00098393	1930.10.30	30	<i>Diospyros sinensis</i>	Sichuan
2056	**				
2057	**				
2058	**				
2059	**				
2060	**				
2061	**				
2062	**				
2063	**				
2064	**				
2065	IBSC0334194	1930.11.02	2	<i>Pteroceltis tatarinowii</i>	Sichuan, Wenchuan (CVH)
2065	PE 00677100	1930.11.02	2	<i>Pteroceltis tatarinowii</i>	Sichuan, Wenchuan

2066	A00022476	1930.11.02	2	<i>Cupressus chengiana</i> Type	Sichuan, NW Wenchuan
2066	PE00013191	1930.11.02	2	<i>Cupressus chengiana</i>	Sichuan, NW Wenchuan
2066	E00182051	1930.11.02	2	<i>Cupressus chengiana</i>	Sichuan, NW Wenchuan
2066	IBSC 0015839	1930.11.02	2	<i>Cupressus chengiana</i>	Sichuan, NW Wenchuan
2066	CAS0213752	1930.11.02	2	<i>Cupressus chengiana</i>	Sichuan, NW Wenchuan
2066	PE00013349	1930.11.02	2	<i>Cupressus chengiana</i>	Tachienlu
2066	US00012089	1930.11.02	2	<i>Cupressus chengiana</i>	Tachienlu
2066	BM000546887	1930.11.02	2	<i>Cupressus chengiana</i>	Tachienlu
2066	K00088054	1930.11.02	2	<i>Cupressus chengiana</i>	Chekian, Techienlu
2066	SYS00001484	1930.11.02	2	<i>Cupressus chengiana</i>	Sichuan (CVH)
2067	**		2		
2068	PE01033762	1930.11.02	2	<i>Berberis potaninii</i>	Sichuan, NW of Wenchuan, 1800 m
2069	**		2		
2070	PE01500226	1930.11.02	2	<i>Jasminum humile</i> var. <i>microphyllum</i>	Tachienlu
2070	PE01500196	1930.11.02	2	<i>Jasminum humile</i> var. <i>microphyllum</i>	Sikang
2070	WUK0011782	1930.11.02	2	<i>Jasminum humile</i> var. <i>microphyllum</i>	Tachienlu
2070	IBSC0459438	1930.11.02	2	<i>Jasminum humile</i> Linn.	Tachienlu
2070	LBG00106085	1930.06.02	2	<i>Jasminum humile</i>	Sikang
2071	**		2		
2072	PE00004068	1930.11.02	2	<i>Pinus densata</i>	Sichuan, NW Wenchuan
2072	SYS00000728	1930.11.02	2	<i>Pinus tabuliformis</i>	Sichuan, NW Wenchuan
2072	IBSC 0012147	1930.11.02	2	<i>Pinus tabuliformis</i>	Sichuan, NW Wenchuan
2073	E00182045	1930.11.02	2	<i>Cupressus chengiana</i>	Sichuan, NW Wenchuan
2073	IBSC 0015717	*	2	<i>Cupressus chengiana</i>	Sichuan, NW Wenchuan
2073	PE00013012	1930.11.02	2	<i>Cupressus chengiana</i>	Sichuan, NW Wenchuan
2073	P01585737	1930.11.02	2	<i>Cupressus chengiana</i>	Sichuan, Tachienlu
2073	IBSC 0015718	1930.11.02	2	<i>Cupressus chengiana</i>	Tachienlu
2073	SYS00001483	*		<i>Cupressus chengiana</i>	Sichuan
2073	K000088060	1930.11.02	2	<i>Cupressus chengiana</i>	Sichuan, Daxue Shan, Kangding 30°3'N, 102°2'E (Kew)
2074	SYS00000903	1930.11.00	2	<i>Picea asperata</i>	Sichuan (info CVH)
2074	IBSC0010658	1930.11.02	2	<i>Picea asperata</i>	Tachienlu
2074	IBSC0010655	*	2	<i>Picea asperata</i>	Sichuan
2074	PE00008195	1930.00.00	2	<i>Picea asperata</i>	Sichuan, 汶川* added by hand, Wenchuan
2074	PE00008440	1930.11.02	2	<i>P. asperata</i> + <i>brachytylla</i> (mixed)	Tachienlu
2074	E00005428	1930.11.02	2	<i>Picea asperata</i>	Sichuan, NW Wenchuan (RBGE)
2075	PE00003464	1930.11.03	3	<i>Pinus armandii</i>	Tuenchuan * (same writing as on the K00088054)
2075	SYS00000592	1930.11.03	3	<i>Pinus armandii</i>	Sichuan, NW Wenchuan
2075	IBSC0011282	1930.11.03	3	<i>Pinus armandii</i>	Sichuan, NW Wenchuan
2076	LBG00085406	1930.11.03	3	<i>Rhododendron micranthum</i>	Sichuan
2076	PE00085406	1930.11.03	3	<i>Rhododendron micranthum</i>	Sichuan
2076	ISBC0482500	1930.11.03	3	<i>Rhododendron micranthum</i>	Sichuan, NW Wenchuan (CVH)
2077	E00228296	1930.11.04	4	<i>Juniperus squamata</i>	Sichuan, NW Wenchuan
2077	PE00020300	*	4	<i>Juniperus squamata</i>	四川 汶川* added by hand, Sichuan, Wenchuan
2078	**		4		
2079	**		4		
2080	**		4		
2081	NAS00181657	*	4	<i>Clematis obscura</i>	Sichuan
2081	PE00419852	*	4	<i>Clematis obscura</i>	Sichuan
2082	**		4		
2083	PE01062151	1930.11.04	4	<i>Carpinus polyneura</i>	Sichuan, W Wenchuan, 1800 m
2084	**				
2085	**				

Endemic cypresses of Sichuan and Gansu Photo Gallery



Fig 1: *Cupressus fallax* seed cones. Cult., France. From seeds collected by Dr. Pan Zhigang.

Immature green cone collected on 2011.03.24.

Scale 1:1.

Fig. 2: *Cupressus fallax*, immature seed cones, 15 months old. Cultivated, France. 2020.05.28. Scale 2:1.





Fig. 3: *Cupressus chengiana* immature seed cones. Cultivated, RGB Edinburgh. December 2019. Courtesy of M. Gardner, RBGE. © RBGE. This specimen was grown from *Wang 028* seeds which were wrongly labelled *C. jiangeensis*. Only the *Wang 026* seeds were collected on the Jiange Cypress. For details, see article p. 15 of this issue. Notice the perfectly rounded green and small cones with distinctive umboes.

Fig. 4: *Cupressus gansuensis*, immature seeds cones, 13 months old. Cult., France. 2020.02.05.
From seeds ex *Wang 027*. Same tree on Figs 5 to 7.





Fig. 5: *C. gansuensis*, immature seed cones, 4 months old. Cult., France. 2020.05.17. Note the square section of the cones.

Fig. 6: *C. gansuensis*, young tree. Cult., France. 2020.05.17.

Fig. 7: *C. gansuensis*, immature seed cones, 16 months old. Cult., France. 2020.05.17.



Photo gallery: Gansu cypresses

All photos © **Debreczy-Rácz (D.A. Project)**. Gansu, Bailong Jiang drainage, Hanbancun, 1998.08.08.

Dendrological Atlas Project Expedition to China, July-October 1998. Supported by the International Dendrological Institute, Inc. (IDRI) and the Herbarium of the Chinese Academy of Sciences (CAS) under the supervision of Dr. Qin Hai-ning, Director of the National Herbarium (PE).



Very old trees on the bank of the river.

Debreczy & Rácz (IDRI & BP) with local guides.

[Cf. Map 1, p. 38.]

Fig. 1: Bark of a very old tree.



Fig. 2: Crone shape.

Fig. 3: Immature 1st year cones.

Fig. 4: Mature cone after seed release.

Fig. 5: Bark of a mature tree.

	3
2	
4	5



On misidentifications of Sichuan Cupresses and other map errors

In Farjon's & Filer's *Atlas of the world's conifers* (2013: 234, Map MAJ-94), the distribution range of *Cupressus chengiana* S.Y.Hu shows one locality in western Sichuan. The material of the two following herbarium sheets (Figs 2 & 3) was identified by Farjon as *C. chengiana*. They are both as originally labelled, *C. duclouxiana*, the Yunnan Cypress, as shown by the rounded and larger cones and the thinner foliage. The two different localities are in two different counties: Daocheng Xian and Xiangcheng Xian, two districts with a border with Yunnan and separated from central Sichuan by the Daxue Range culminating at 7556 m (Gongga Shan). In the Atlas map only the sample from Xiangcheng Xian is plotted.

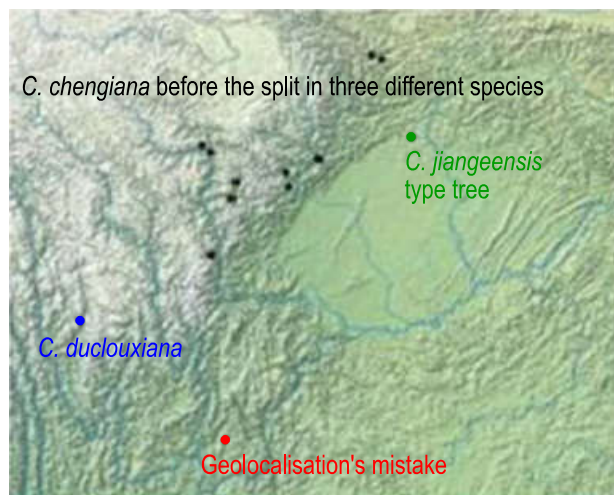


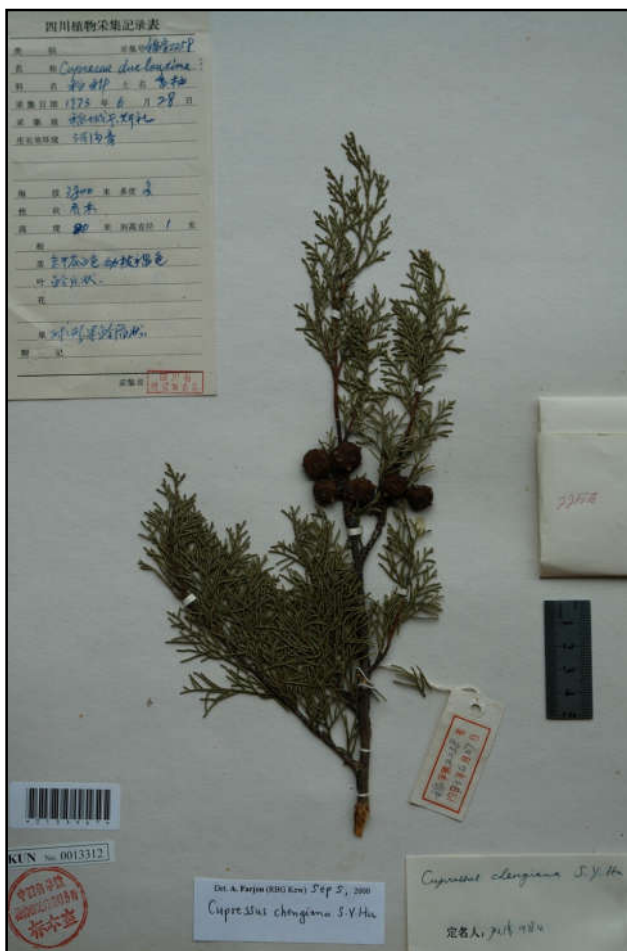
Fig. 2: *Cupressus duclouxiana* identified as *C. chengiana* by Farjon, Xiangcheng Xian¹, Sichuan. Sichuan Vegetation Investigation Team 2999. 1973.07.26. Alt. 2700 m. © [CVH](#) - [KUN0133944](#).



The dot in southern Sichuan is a further error. *C. gansuensis* is represented by only two localities, *C. chengiana* by three and *C. fallax* by five. There is no information on *C. jiangensis* (cf. p. 15) a single old cultivated tree (now *C. fallax*). On the original map this isolated specimen is not distinguished from the other localities

Fig. 1: Updated map after Farjon & Filer, Map MAJ-94, showing the corrections. Three black dots have been replaced by colour dots with their explanations. Compare this map to the ones on pages 38 to 43.

Fig. 3: *Cupressus duclouxiana* identified as *C. chengiana* by Farjon, Daocheng Xian, Sichuan. Sichuan Vegetation Investigation Team 2258. 1973.06.28. Alt. 3800 m. © [CVH](#) - [KUN0133947](#).



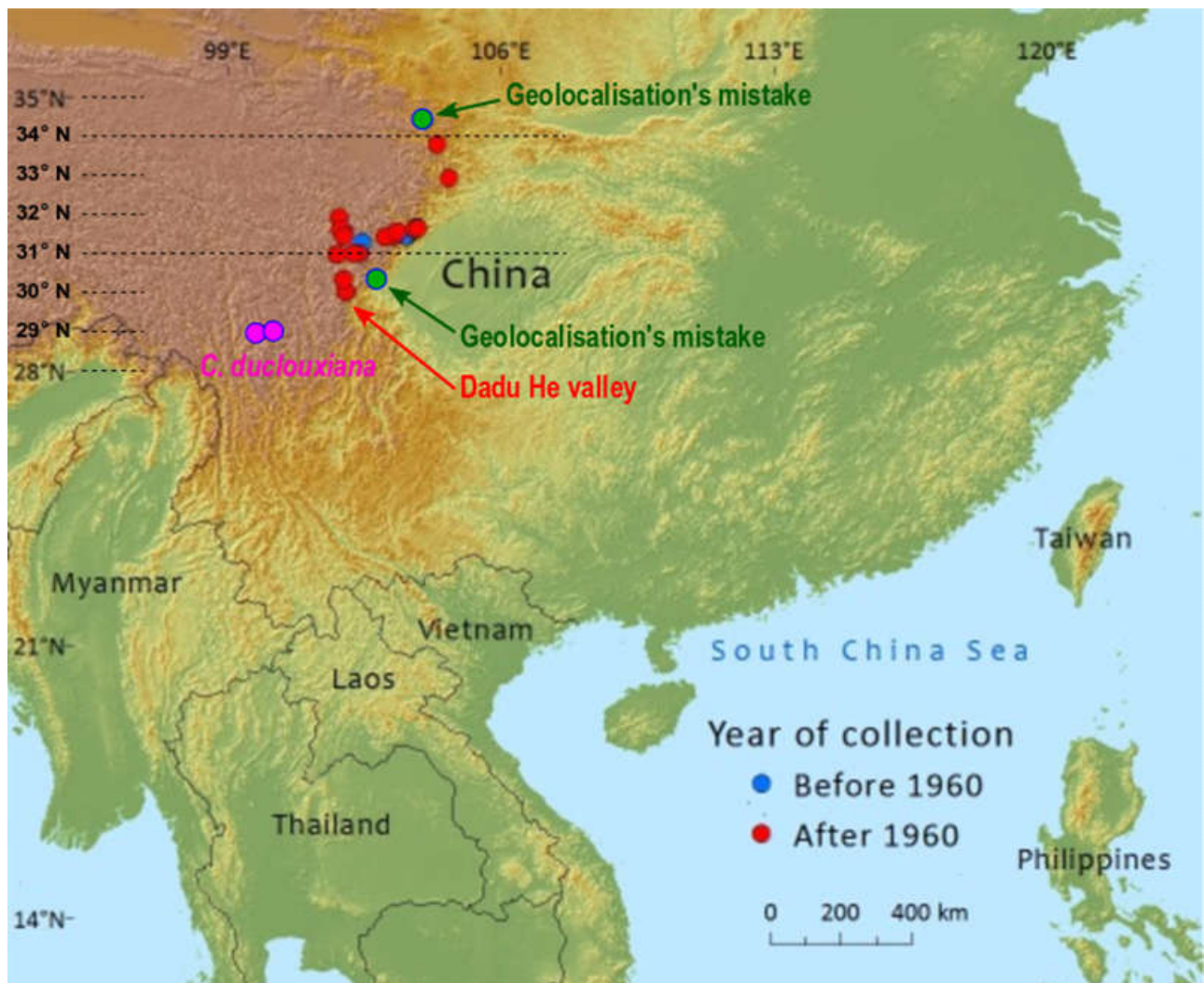


Fig. 4: *C. chengiana* distribution range according to the [threatened conifers RBGE website](https://threatenedconifers.rbge.org.uk/)², updated to show the corrections. Explanations below.

The RBGE map repeats the identification errors of Farjon and shows both *C. duclouxiana* records in western Sichuan under *C. chengiana*. The westernmost record is in Xiangcheng Xian, when east of it is the one from the Daocheng Xian. In Gansu there is no *C. gansuensis* (previously *C. chengiana* - cf. Maerki & Hoch 2020) population north of the 34th parallel. South of the 31st parallel the only populations of *C. fallax* (previously *C. chengiana*) are in the Dadu He valley, while the *C. chengiana* of the Min Jing drainage are only present north of that parallel.

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¹ The specimen T.T.Yü 13407 of the same place: Xiangcheng Xian, Dongsong, “Shiangcheng, Tungzung”, was first correctly identified as *C. duclouxiana* by Farjon in 1994 (label [E00747249](https://doi.org/10.1111/j.1365-3113.1994.tb00747.x)), but in Farjon 2005: 193, he lists this Yü 13407 as *C. chengiana* and puts it 270 km to the NE, in the Dadu He valley, confusing Tungzung with “Tung River”, Dadu He (JH).

² <https://threatenedconifers.rbge.org.uk/conifers/cupressus-chengiana>, accessed on 2020.06.03. The original map is under copyright and is reproduced here under fair use for correction purpose.

Article reviews

On the taxonomy of the Asian *Cupressus* species

Terry, R.G., A.E. Schwarzbach & J.A. Bartel (2018). A molecular phylogeny of the Old World cypresses (*Cupressus*: Cupressaceae): evidence from nuclear and chloroplast DNA sequences. *Pl. Syst. Evol.* 304: 1181-1197. DOI: [10.1007/s00606-018-1540-1](https://doi.org/10.1007/s00606-018-1540-1).

Abstract:

“Studies of phylogenetic relationships among cypresses of the Old World (*Cupressus*; Cupressaceae) have been plagued by unresolved relationships, poor branch support, and conflict between data sets and methods of analysis. In this study, we combined 5.4 kb of aligned DNA sequence and 157 binary characters with previously published data in examining phylogenetic relationships among *Cupressus* species. Bayesian and parsimony analysis of the combined data or of the nuclear data alone always recovered three principal clades of *Cupressus*; however, tests of phylogenetic incongruence could not distinguish between competing relationships among the three principal *Cupressus* lineages. In contrast, incongruence tests often found statistically significant conflict between the nuclear and plastid data, particularly with respect to the placement of *C. chengiana*. Consistent with previous studies and prevailing taxonomic opinion, we find *C. darjeelingensis* more closely related to cypresses of the New World (*Hesperocyparis*). In contrast, we placed accessions of *C. assamica* and *C. tonkinensis*, two putatively Old World species suggested to be misidentified New World taxa by some authors, within well-supported Old World clades. Statistical analysis of genetic distances suggests instances in which taxa recognized as distinct species by some authors are identical or nearly so and may best be considered a single taxon. Conversely, we identify instances in which infraspecific taxa are more distantly related to one another than those traditionally recognized as distinct species. Factors confounding cypress taxonomies, including poor morphological differentiation, misidentification, and the use of accessions of questionable provenance, are discussed.”

Unfortunately the results of this new research bring nothing really new compared to the study led by Rushforth in 2003 (Rushforth *et al.* 2003) and by Maerki (Maerki 2013, 2014, 2014a, 2014b, 2014c, 2014d, 2017), with a great exception which the authors failed to recognise because of a taxonomical error. They analysed a sample collected by Rushforth in Bhutan (KR1282), from Pele La (locality erroneously labelled Lele La) under *Cupressus torulosa*, but it is not this species. For all accessions, there is no indication if the material was collected on a wild or a cultivated specimen and what kind of material has been collected. This has important consequences. *C. torulosa* is not present in Bhutan, but only in centre and western Nepal and further west in NW India (Uttarakhand and Himachal Pradesh). A second sample from Bhutan was analysed: the *C. “cashmeriana”* tree at Kew Gardens, wrongly selected by Farjon as the neotype of this name, when Maerki (2014d) demonstrated that the neotype should be the tree in the Jardin des Plantes in Paris where Carrière worked, rather than the tree at Kew which Carrière never saw. The French *C. cashmeriana* was earlier analysed (Maerki 2014a; 2014b; 2014c) and found to differ significantly from the Italian “*cashmeriana*” (Isola Madre) from which the Kew specimen is a clone. The Isola Madre tree is a cultivar with a glaucous foliage while a sister tree of a same age also cultivated in northern Italy displays the wild green foliage (seeds received in 1862; trees easily reproduced by cuttings). Based on morphological analyses and statistics these Italian trees were determined as Bhutanese specimens under *C. tortulosa* Griff. (Maerki 2014b). Thus the authors were not aware that they analysed two different specimens of Bhutanese cypresses. And the results – if they can be trusted – point to the fact that there are two different species in Bhutan¹. Is it possible to say that the authors discovered serendipitously a new *Cupressus* species? We are witnessing a very rare case of botanical research where the confusion on the taxonomy brings the discovery of a possible new taxon, but without the authors being aware of the fact. This should be confirmed by sampling all the wild populations in Bhutan; they are scattered in remote areas of western, central and eastern Bhutan. The Pele La locality (the Pele pass) is close to Nordbing (central Bhutan) where a wild population, the most accessible one, was recently cut. KR1282 was collected there as five wild regenerated seedlings by Rushforth near Nordbing on the 9 May 1987 at about 2650 m altitude (Rushforth, pers. comm.).

¹ It is necessary to be cautious. Phylogenetic trees are the results of computer programs and show only **probabilities**. Several such trees are thus generated and usually only one tree is published. The possibility exists that another tree displays a close relationship between the two Bhutanese cypresses and that this phylogenetic tree was discarded because of the erroneous identification of the sample from the Pele La.

In any case *C. torulosa* is missing in this study.

The Nordbing cypress population was already described by Silba under *C. himalaica* (1987), with the holotype by [Grierson & Long 1079](#). *C. tortulosa* represents the easternmost population in Bhutan. Now it is necessary to access and study the westernmost wild Bhutanese population. From our observations on some cultivated trees, there is the possibility that these cypresses are another distinct taxon, although Xu *et al.* (2010) found only one cpDNA haplotype for all Bhutanese cypresses.

The research was conducted following the taxonomy of Little (2006), which is currently outdated concerning the Himalayan cypresses. However, no better are the taxonomies of Silba and Farjon (cf. p. 72, Table 1, comparing the different taxonomies with the necessary corrections)². If three articles by Maerki (2013, 2014, 2017) dealing with these taxa are quoted and mentioned in the bibliography, the most important research papers are ignored without any discussion or refutation, let alone an explanation (Maerki 2014a, 2014b, 2014c & 2014d). Hence the added unnecessary confusion which the authors wanted to eliminate as one of their objectives.

Another merit of this study (the first one being the possible discovery of a new taxon) is to make clear one interrogation first raised by the results of the research led by Rushforth on the eastern *Cupressus* species, the position of *C. "jiangeensis"*. In that 2003 paper it was stuck on the cladogram halfway between *chengiana* and *funbris* with *tortulosa* (as "*cashmeriana*") and *torulosa* as in-between taxa (cf. Hoch & Maerki 2020: 20, Fig. 3). This lead to the following comment:

"*Cupressus jiangeensis* has been recognized (Farjon, 1998) as a variety (*C. chengiana* var. *jiangeensis* (N. Zhao) Silba), so its association with the *C. chengiana* group (Fig. 1) was expected. However, it is so distinctive that support for specific recognition is strengthened by this analysis."

The specimen analysed in Terry *et al.* is the same as one of the two studied already in the 2003 research on RAPDs: material from *Wang 026*, one of the two specimens cultivated by Rushforth. It is necessary to understand the origin of that material: it came from seeds collected by Wang and distributed in 1990 by Silba under the name of the cypress first described by Zhao (1980). As with several seedlots distributed by Silba at that time (*C. assamica*, *C. darjeelingensis*, *C. "tonkinensis"*), the exact origin and chain of acquisition was far from offering positive scientific records of origin. With respect to *Wang 026*, the seeds were sent by an academic and we will not dispute the fact that they were effectively collected from the lone type tree described as *C. jiangeensis*. This cypress is cultivated and was planted along a road together with a full row of *C. funbris*. Rushforth *et al.* 2003 as well as the article here under review clearly show that the analysed specimens *Wang 026* are hybrids *C. fallax* ♀ × *C. funbris* ♂. Little (2005: 258) – after Silba (1982: 158) – proposed this hypothesis, but unfortunately he did not mention on which material his supposition was based. The type tree is not a hybrid, but a *C. fallax* as evidenced by the cones and the molecular analysis by Xu *et al.* 2010³. The hybrids were obtained by seeds from the mother tree fertilised by *C. funbris* pollen. Like Little, the authors mention the hybrid hypothesis, but fail to draw the conclusions from their results.

Stating that *Wang 026* is from Tibet is another error; the locality of the type and only tree of *C. jiangeensis* is in Sichuan, Jiange Xian, well away from the Tibetan part of that province.

The authors justify the current study by declaring that there is a lot of confusion in the relationships of the Asiatic cypresses. Is this really the case since the observations by Rushforth (Rushforth 1987, 2003; Maerki 2017) and the statistical analyses by Maerki (2014b)? They admit that allopatric speciation processes took place to give the extant cypress species. One of the first consequences of such evolution is that the relationships are basically geographic. The molecular analyses confirm this evidence.

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² For instance Little and Farjon confuse a New World cultivated species (*C. darjeelingensis*) with *C. cashmeriana*.

³ For all details, see dedicated article, Hoch & Maerki 2020, p. 15 of this issue.

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On *Cupressus* and *Juniperus* phylogeny

Zhu, A., W. Fan, R.P. Adams & J.P. Mower (2018). Phylogenomic evidence for ancient recombination between plastid genomes of the *Cupressus-Juniperus-Xanthocyparis* complex (Cupressaceae). *BMC Evolutionary Biology* 18:137. DOI: [0.1186/s12862-018-1258-2](https://doi.org/10.1186/s12862-018-1258-2).

Abstract:

Background: Phylogenetic relationships among Eastern Hemisphere cypresses, Western Hemisphere cypresses, junipers, and their closest relatives are controversial, and generic delimitations have been in flux for the past decade. To address relationships and attempt to produce a more robust classification, we sequenced 11 new plastid genomes (plastomes) from the five variously described genera in this complex (*Callitropsis*, *Cupressus*, *Hesperocyparis*, *Juniperus* and *Xanthocyparis*) and compared them with additional plastomes from diverse members of Cupressaceae.

Results: Phylogenetic analysis of protein-coding genes recovered a topology in which *Juniperus* is sister to *Cupressus*, whereas a tree based on whole plastomes indicated that the *Callitropsis-Hesperocyparis-Xanthocyparis* (CaHX) clade is sister to *Cupressus*. A sliding window analysis of site-specific phylogenetic support identified a ~15 kb region, spanning the genes *ycf1* and *ycf2*, which harbored an anomalous signal relative to the rest of the genome. After excluding these genes, trees based on the remainder of the genes and genome consistently recovered a topology grouping the CaHX clade and *Cupressus* with strong bootstrap support. In contrast, trees based on the *ycf1* and *ycf2* region strongly supported a sister relationship between *Cupressus* and *Juniperus*.

Conclusions: These results demonstrate that standard phylogenomic analyses can result in strongly supported but conflicting trees. We suggest that the conflicting plastomic signals result from an ancient introgression event involving *ycf1* and *ycf2* that occurred in an ancestor of this species complex. The introgression event was facilitated by plastomic recombination in an ancestral heteroplasmic individual carrying distinct plastid haplotypes, offering further evidence that recombination occurs between plastomes. Finally, we provide strong support for previous proposals to recognize five genera in this species complex: *Callitropsis*, *Cupressus*, *Hesperocyparis*, *Juniperus* and *Xanthocyparis*.

Here we deal with an extraordinary and very interesting study. The final results are clearly showing that the genus *Cupressus* is monophyletic, but the discussion and conclusion support nevertheless and against all logic a split of the genus into four genera. The new world cypresses plus *vietnamensis* form a monophyletic clade according to molecular analyses. However, as the genus *Xanthocyparis* was conserved by the Nomenclatural Committee following a mistaken request⁴ by Mill & Farjon (2006) against a *Callitropsis* genus extended to all new world cypress species (new combinations were made by Little [2006]), it was suggested to rename all new world *Cupressus* species into *Xanthocyparis* (while the much more simple possibility to keep an unique *Cupressus* genus was forgotten⁵), some authors decided instead to split the Vietnamese and the new world cypresses into three genera on the base of morphological characters. The problem is that these characters are:

- Not typical of these species as they can be found on other *Cupressus* taxa.
- Fit for distinguishing species, but not for genera.

⁴ See Maerki & Frankis 2012.

⁵ Except by Christenhusz *et al.* 2010, as well as by the *Cupressus* Conservation Project and several other taxonomists, who usually rely on data not limited to molecular confusing “results” (these results depend on the set of genes studied – and the present article under review is quite explicit about that – and give contradictory phylogenetic trees. Cf. Maerki 2017). For the suggestion to rename all D.P. Little *Callitropsis* into *Xanthocyparis*, see Brummit 2007. Surprisingly and fortunately it has not been done until today.

The main morphological characters used for the splitting (cf. Debreczy *et al.* 2009; Adams *et al.* 2009) are:

- 1- A columella is usually present on *C. nootkatensis* cones; this columella is the remnant part of the cone stem, pointing to the fact that an ancestor of this species had cones with more scales; a columella is observed in some cones of the following species: *C. arizonica*, *C. stephensonii*, *C. lusitanica*, *C. tortulosa*, etc.
- 2- The number of scales is between 4 and 6; cones with 4 scales are observed in the following species: *C. arizonica*, *C. nevadensis*, *C. macnabiana*, *C. lusitanica*, *C. guadalupensis*, *C. pygmaea*, etc.
- 3- Resin dots present on *C. vietnamensis* seeds; such resin dots are observed for instance on *C. stephensonii* seeds; they are also present on a *Chamaecyparis* species, but no one will advocate to split that genus because of such a tiny and meaningless character to describe a new genus.
- 4- Number of cotyledons: if it is true that there is statistical evidence discriminating the New World from the Old World cypresses, two cotyledons can be observed in more than one New World species, and three cotyledons can also be observed occasionally on Old World cypress species; moreover the two cotyledons link *C. vietnamensis* and *C. nootkatensis* to the Old World cypresses; and also a small percentage of *C. nootkatensis* seedlings have three cotyledons.
- 5- Foliage is rarely a phylogenetically reliable character as it evolves very quickly according to the climatic conditions as already observed by Frankis (1993); thus dimorphic leaves with flattened shoots are typical for moist climate (*C. nootkatensis*, *C. funebris*, *C. cashmeriana*, *C. benthamii*) while monomorphic leaves are found commonly on drought adapted species (*C. arizonica*, *C. stephensonii*, *C. sempervirens*, *C. chengiana*, etc.).

Research demonstrating the monophyly of the genus *Cupressus* – such as the studies by Dörken, Nimsch and Jagel on *C. vietnamensis* and *C. nootkatensis* ontogeny (see bibliography under the names of these authors below) is systematically ignored. The different hybrids are also discarded from most if not all analyses, although they are strong evidence for a monophyletic genus. Indeed when a hybrid is observed, it implies the compatibility of the whole half genome of each parent, whereas any molecular analysis involves only a very small part of the genetic material ($\pm 0.002\%$). Further, the primordial question to know if evolution follows a mathematical model is never asked.

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Table 1: Comparison of four taxonomies by Silba, Little, Farjon and the *Cupressus* Conservation Project. Corrections after Terry *et al.* 2018: Table 1.

	Species	Authors	Silba (2005)	Little (2006)	Farjon (2010)	Cup. Conserv. Proj.	This study
1	<i>Cupressus assamica</i> synonym	Silba (1994) emended Maerki & Rushforth	S	Note	= cashmeriana f	= <i>cashmeriana</i>	Included
2	<i>Cupressus atlantica</i>	Gaussen (1950)	ssp. of <i>dupreziana</i>	S	var. of <i>dupreziana</i>	S	Included
3	<i>Cupressus austrotibetica</i>	Silba (1988)	ssp. of <i>duclouxiana</i>	S	syn. torulosa	S	Included
4	<i>Cupressus cashmeriana</i>	Carrière (1867)	S ***	S	S	S	Included
5	<i>Cupressus chengiana</i>	S.Y.Hu (1964)	S	S	S	S	Only one of the two included
5a	<i>Cupressus fallax</i>	Franco (1969)	syn. chengiana	syn. chengiana	syn. chengiana	S (2020)	
6	<i>C. chengiana</i> var. <i>kansouensis</i>	Silba (1994)	ssp. <i>kansouensis</i>	= chengiana d	= chengiana f	S (2020) **	Included
7	<i>Cupressus darjeelingensis</i>	Silba (Silba) (1990)	S	= cashmeriana d	= cashmeriana f	New World	Included 2x
8	<i>Cupressus duclouxiana</i>	Hickel in Camus (1914)	S	S	S	S	Included
9	<i>Cupressus dupreziana</i>	A.Camus (1926)	S	S	S	S	Included
10	<i>Cupressus funebris</i>	Endlicher (1847)	S	S	S	S	Included
11	<i>Cupressus gigantea</i>	W.C.Cheng & L.K.Fu (1975)	S	S	var. of <i>torulosa</i>	S	Included
11a	<i>Cupressus himalaica</i>	Silba (1987)	ssp. of <i>cashmeriana</i>	= cashmeriana d	= cashmeriana f	= <i>tortulosa</i> or S?	Included
12	<i>Cupressus jiangensis</i>	N.Zhao (1980)	ssp. of <i>chengiana</i>	S	var. of <i>chengiana</i>	syn. fallax	Not included
12a	<i>Cupressus xwangii</i>	J.Hoch et al. (2020)	ssp. of <i>chengiana</i>	<i>jiangensis</i>	var. of <i>chengiana</i>	notho S (2020)	Included
13	<i>Cupressus karnaliensis</i>	Silba(1994)	S	= torulosa d	syn. torulosa	DD	Not included
14	<i>Cupressus sempervirens</i>	Linnaeus (1753)	S	S	S	S	Included
15	<i>Cupressus tonkinensis</i>	Silba (1994)	ssp. of <i>funebris</i>	S	syn. torulosa	S	Included
16	<i>Cupressus torulosa</i>	D.Don in Lambert (1824)	ssp. of <i>lusitanica</i>	S	S	S	Not included
17	<i>Cupressus tortulosa</i>	Griffith (1854)	= cashmeriana	= cashmeriana d	= <i>cashmeriana</i>	S	Included 2x

f = Farjon 2001; **d** = Little 2005; S or **S** = species; **DD** = Data Deficient

*** Silba lists two synonyms under *Cupressus cashmeriana* : *C. pendula* Griff. which is not a *cashmeriana* and *C. pseudohimlaica* Silba which is a *C. cashmeriana* based on a French collection.

in red : corrections

in green : after interpreting Terry et al. 2018 and/or after new analyses.

**** C. gansuensis Maerki & J.Hoch 2020.**

Note: Little (2005) puts C.assamica as synonym of C.lusitanica , and he is listing the holotype under both C.lusitanica (169) and C.cashmeriana (233).