

ONE UNUSUAL LILAC IS INDEED A PRIVET EVIDENCE FROM DNA SEQUENCE DATA

Jianhua Li

John H. Alexander III¹

Donglin Zhang²

¹Arnold Arboretum of Harvard University, 125 Arborway, Jamaica Plain,
MA 02130

²Landscape Horticulture Program, University of Maine, 5722 Deering
Hall, Orono, ME 04469

We all know that lilacs (*Syringa*), especially tree lilacs, and privets (*Ligustrum*) share similar floral structures. They differ in fruit type: fleshy berries in *Ligustrum* and capsules in *Syringa*. Curiously, in the Olive family (Oleaceae) to which both lilacs and privets belong, there is one species standing morphologically between *Syringa* and *Ligustrum*. This species produces dehiscent (drying and splitting) berries, which is unusual since few berries are indehiscent. This kind of fruit occurs only in several families of flowering plants (Lawrence and Green 1994). The fruits of this species (*see photo*) are fleshy in the fall, as in *Ligustrum*, and later gradually lose fleshiness then split open as those of *Syringa*. The "aberrant" fruit type provides evidence for the affinity of *Syringa* and *Ligustrum*, which has been confirmed by Wallander and Albert (2000) in their sequence analyses of chloroplast genes of the Oleaceae.

This species was first described as *Syringa sempervirens* by Franchet in 1886 based on a fruit specimen collected from Yunnan, China. Since then, it has been controversial regarding how to treat this plant taxonomically. Several botanists, including Schneider (1911), Smith (1916), and Stapf (1933), based on its morphological intermediacy between *Syringa* and *Ligustrum*, recognized this plant as a unique genus, *Parasyringa*. Lingelsheim (1920), however, considers it to be a species of *Ligustrum* (*L. sempervirens* [Franchet] Lingel), which has been accepted by many authors, including Mansfeld (1924), Chang and Miao (1986).

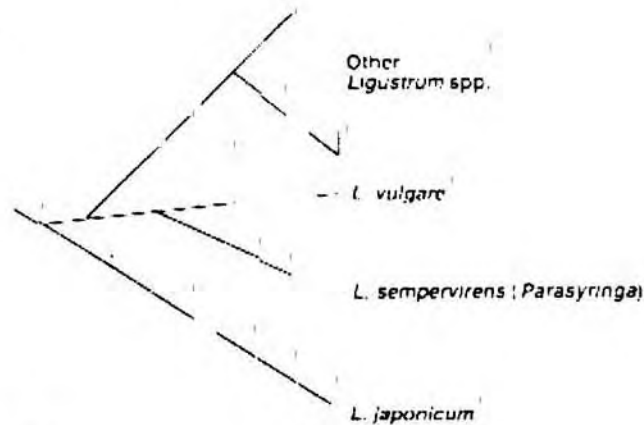
and Chang (1996), and Chang (1996).

Nevertheless, because of its unique fruit morphology, this interesting species has long been treated as a separate lineage from the remaining species of *Ligustrum* (Kohne, 1904; Mansfeld, 1924; Change and Miao, 1986; Change, Qiu, and Green, 1996). On this basis, Stapf (1933) stated that "whilst it can evidently not retain its original place in *Syringa*, its status within or without *Ligustrum* is debatable indeed and in the end merely a matter of opinion and convenience." Paraphrased, in an evolutionary sense, the debate dictates that in the *Syringa+Ligustrum* group, there are three separate lineages, namely *Syringa*, *Ligustrum*, and this unique species from Yunnan; and the relationship of this species with lilacs and privets remains unclear.

To understand the genetic relationship of this unusual species and to clarify whether it belongs to *Syringa* or *Ligustrum*, we analyzed DNA sequences of this unique species and all major groups of *Syringa* and *Ligustrum*. The genetic markers we used are sequences of both the internal and external transcribed spacers of nuclear ribosomal DNA - they have proved to be useful for resolving genetic relationships of lilacs (Li and Alexander 2000). Sequencing procedures are described in detail elsewhere (Li et al. 2001).

Our results clearly indicate that *Ligustrum* is a natural genus, and this unusual species from Yunnan is positioned genetically well within *Ligustrum*; *L. japonicum* is the first lineage of *Ligustrum* (fig.1); and *L. sempervirens* is likely to be closely related to *L. vulgare*. Green and Fliegner (1991), based on the resemblance of this species to privets in its habit, floral structure, and foliar morphology, suggest that this unique species is a typical privet except that its berries are dehiscent. Our results are consistent with Green and Fliegner, confirming that *Syringa sempervirens* or *Parasyringa sempervirens*, is indeed a privet, namely, *Ligustrum sempervirens*.

Figure 1



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ACKNOWLEDGMENTS

We thank Ms Xin Tian and Dr. D. Z. Li of Kunming Botanical Institute for collecting leaf material and voucher specimens of *Ligustrum sempervirens*. This project is partially sponsored by the International Lilac Society.