



## A new species of *Canavalia* (Leguminosae, Papilionoideae) from Brazil with a specialized corolla suggesting bird pollination

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### Abstract

During the development of a systematic study of the species of *Canavalia* from the New World a new species with floral morphology suggesting a bird pollination system was found, contrasting with the bee pollination pattern of the genus. *Canavalia reflexiflora* differs from the other species of the genus mainly by its flowers with a reflexed standard; in addition, it also has red flowers, wing and keel petals as long as the standard petal, and an oblong seed with the hilum surrounding nearly half the seed circumference.

### Resumo

Durante o desenvolvimento de um estudo sistemático das espécies de *Canavalia* que ocorrem no Novo Mundo foi encontrada uma nova espécie com morfologia floral que sugere um sistema de polinização por pássaros, contrastando com o padrão de polinização por abelhas do gênero. *Canavalia reflexiflora* difere das demais espécies do gênero principalmente pela flor com o estandarte reflexo, além disso, também possui flores vermelhas, asas e pétalas da quilha tão longas quanto o estandarte, e sementes oblongas com o hilo circundando cerca da metade da semente.

**Key words:** *Catodonia*, Fabaceae, hummingbird, taxonomy

### Introduction

*Canavalia* Adanson (1763: 325) is a pantropically distributed genus comprising approximately 70 species, with a major centre of diversity in the Neotropics (Sauer 1964, John 1970, Fantz 1976, Lewis & t'Mannetje 1982, Aymard & Cuello 1991, Lewis 1991, Nielsen 1993, 2004). The genus is characterized by its woody lianescent habit, trifoliolate leaves, pseudoracemose inflorescences, resupinate flowers, bilabiate calyces, fruits elastically dehiscent and with sutural ribs on the outer surface of the two valves, and seeds with a linear hilum (Sauer 1964). Furthermore, the flowers of *Canavalia* are zygomorphic, usually have nectar guides, are sweetly scented, and have concealed nectar, considered by Faegri & van der Pijl (1979) as characteristics typical of pollination by bees.

Flowers in the vast majority of the Papilionoid legumes present a particular morphology, the papilionate flower. It is characterized by modified petals with specific functions: the outermost standard petal is associated with the attraction of floral visitors; the keel petals surround and protect the staminal sheath and the nectary and thus may contribute to pollen and nectar economy (Westerkamp 1997, Endress 1999), and the wing petals, together with the keel, act as a landing platform for visiting pollinators (Arroyo 1981). The morphology of *Canavalia* flowers probably evolved as a bee-pollination mechanism (Leppik 1966) and, in fact, the pollination by bees is far the most widespread reproduction mode in papilionoid legumes (Arroyo 1981). In most genera presenting papilionate flowers the standard is the uppermost petal. However, in a few genera including *Canavalia*, *Centrosema* Benth (1837: 53), *Periandra* Martius ex Benth (1837: 56) and *Clitoria* Linnaeus (1753: 753) the flowers are resupinate and the functions of the