

Short Communication

FLYING KITES: A THREAT TO CONSERVATION OF PLANTS IN AJC BOSE INDIAN BOTANIC GARDEN, INDIA

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INTRODUCTION

Flying kites is an old way of amusement developed during the 5th-century BC in China (Needham, 1965) and become popular and was eventually spread by traders to Korea, and across Asia to India. The earliest evidence of Indian kite flying comes from miniature paintings from the Mogul Period around 1500 (Webster, 2004). In the present day it has reached its glorious height with many national and international competitions being organized every year. It became very popular in Indian society and linked to various religious festivals.

With the advancement of technology and civilization, the material used in kite flying has also changed. Now a day non degradable nylon thread or *manjha* are commonly used as line in kite flying, giving them much strength and durability



Nylon thread used in kite flying

which is an essential requirement during the kite fighting. But use of such thread is proving fatal for the survival of rare and endemic trees conserved in AJC Bose Indian Botanic Garden (AJC B I B G). AJC B I B G, Howrah is one of the biggest and oldest botanic garden of its type in South East Asia spread over an area of 273 acre with lush green vegetation and water bodies.



A detached kite with string

Actively involved in *ex-situ* conservation for last 228 years, this botanic garden is a repository of 14,122 plants under 1,377 species mostly of threatened and endemic nature (Debnath *et al.*, 2014). This garden is surrounded by human habitation along its three sides and river Hooghly on its southern side. Gradual increased population pressure

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in the vicinity of the garden has affected the environ of the botanic garden in different ways. Increased level of pollution from domestic effluents has caused havoc in the garden in terms of fish mortality and overgrowth of phytoplankton in the lakes (Singh, *et al.*, 2015). At the same time, a new kind of anthropogenic factor, flying kites for amusement is getting dominant around the garden whose intensity has increased many folds during the last few years. Unfortunately, such apparently innocent amusement has proven fatal for the survival of rare and endemic plant species of botanic garden. The abandoned, trapped kites on tree tops with long hanging strings act as an excellent primary climbing support for the tender climbers, giving easy passage to reach even the top of the tall trees. Later production of lateral branches from the top of the climber and other accessory branches and even other climbers from the ground reaches to the top taking support of the first climber, completely covers the tree top, thus inhibit the penetration of sunlight. This reduces the assimilation rate of these trees and reduces the growth rate. At the same time, it also hampers the pollination (anemophily) by suppressing the exposure of brilliant flowers to the pollinators and competing for nectar content.

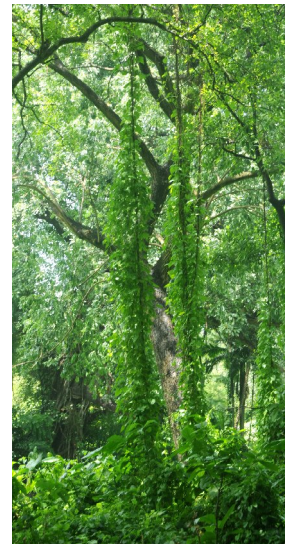
Ghosh *et al.* (1975) reported 151 climbing plant species in AJCBIBG. In this study, 15 climbers were recorded those cause havoc damage to the trees:

1. *Antigonon leptopus* Endl. (Polygonaceae)
2. *Bignonia unguis-cati* L. (Bignoniaceae)
3. *Cocculus hirsutus* (L.) Diels (Menispermaceae)
4. *Dioscorea bulbifera* L. (Dioscoreaceae)
5. *Hemidesmus indicus* R. Br. (Asclepiadaceae)
6. *Ichnocarpus frutescens* R. Br. (Apocynaceae)

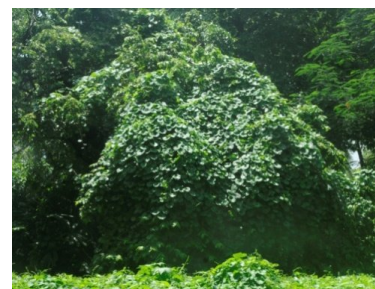
7. *Ipomoea quamoclit* L. (Convolvulaceae)
8. *Merrimia vitifolia* Hallier f. (Convolvulaceae)
9. *Mikania cordata* (Burm.) Robinson (Asteraceae)
10. *Operculina turpethum* (L.) Silva Manso (Convolvulaceae)
11. *Porrana paniculata* Roxb. (Convolvulaceae)
12. *Stephania japonica* (Thunb.) Miers (Menispermaceae)
13. *Tiliacora racemosa* Clebr. (Menispermaceae)
14. *Tinospora cordifolia* Miers (Menispermaceae)
15. *Tricosanthes bracteata* (Lamk.) Voigt (Cucurbitaceae)

As per their physiological requirement, these climbers need a support to climb up. Once reaching to the top of the tree, they start proliferating in such a way that they compete for sunlight and pollinators. Tall trees with smooth and stout stem rarely provide the support to these tender climbers.

But string of kite hanging from one of such tree top provides an ideal support to the climbers for



Operculina turpethum climbing high taking support of an abandoned kite string



Mikania micrantha reaching top of the tree taking support of kite string

easy anchoring and twisting around. In 7 out of 10 cases, it is found that, these noxious weeds are reaching to the canopy of other trees only due to these strings.

Moreover, these strings are harmful to the avian



Cattle egret entangled with an abandoned kite thread

fauna. During study, it is observed that many bird species are trapped with the abandoned string of kites on tree top and caused permanent damage to their wings or even their death.

In many states like Odisha, Andhra Pradesh, Rajasthan, etc. selling of nylon threads/*Manjha* used for kite flying has been banned and/ or not allowed kite flying during morning and afternoon for safety of the flying birds under the enforcement of Section 5 of the Environment (Protection) Act, 1986. Now the concerned authorities have to come forward for generating awareness among the common

people about adverse effect of such game and put some restriction of flying kites in and around botanic gardens which have been specially designed for *ex-situ* conservation practices for plants.

ACKNOWLEDGEMENT

The authors are thankful to the Director, Botanical Survey of India for facilities and encouragement.

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