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### REPORT ON THE OCCURRENCE OF INVASIVE SPECIES GIANT *SALVINIA* (*SALVINIA MOLESTA* MITCHELL) IN KOLAVOI LAKE, CHINGLEPUT DISTRICT – TAMIL NADU

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**Abstract:** Giant *Salvinia* (*Salvinia molesta Mitchell*) is a floating aquatic fern which is native to Brazil but has been distributed worldwide (Mitchell, 1979). It has been documented in more than 20 countries, introduced as an aquarium or water garden species (Room et al., 1981). Dense mat formation of giant *Salvinia* can impede transportation, irrigation, hydroelectric production, flood and mosquito control as well as destroy natural properties of habitat, degrade water quality and hinder agricultural endeavors such as rice cultivation and fishing (Holm et al., 1977, Mitchell, 1979). Giant *Salvinia*, an aggressive aquatic invasive species can completely cover water surfaces, forming mats up to 1m thick (Thomas and Room, 1986).

**Keywords:** Giant *Salvinia*, Worldwide



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## INTRODUCTION

**Common name:** Giant *Salvinia*

Some other common names for this species are **Kariba weed**, African pyle, Aquarium watermass, Koi kandy, Water Velvet, Water Fern and *Salvinia*.

**Scientific name:** *Salvinia molesta* Mitchell

Giant *Salvinia* is in the family *Salviniaceae* which are the water ferns. This species name *molesta* is latin for troublesome or annoying that could not be any more accurate; some people called this plant as the World's weed.

### Systematics

Kingdom	:	Plantae
Division	:	Pteridophyta
Class	:	Pteridopsida
Order	:	Salviniales
Family	:	Salviniaceae
Genus	:	<i>Salvinia</i>
Species	:	<i>molesta</i> Mitchell

### **Distribution:**

Giant *Salvinia* is native to Brazil. Its current range includes New Guinea, Australia, Mauritius, Africa, India, Sri Lanka, Ceylon, New Zealand and the United States.

Just in the United States, giant *Salvinia* can be found in the states of Alabama, Arizona, South Carolina, North Carolina, Texas, Louisiana, Mississippi, Georgia, Florida, Hawaii, California and Virginia (Room 1986 and Room 1990).

### **Indiana:**

Giant *Salvinia* has not yet been detected in Indiana's waters but it is in on our Aquatic Invasive Species Watch List.

Giant *Salvinia* is one of the world's most noxious aquatic weeds. It can be found in lakes, ponds, oxbows, ditches, slow floating streams and rivers, backwater swamps, marshes and rice fields.

Giant *Salvinia*'s rapid spread, environmental stress makes it an aggressive and competitive species that can potentially have a huge impact on aquatic environments, local economies and human health. Giant *Salvinia* is listed as a noxious weed by Neveda Administrative Code.

**Habitat:**

Giant *Salvinia* can invade almost any kind of fresh water system. It prefers tropical, sub-tropical or warm temperatures and grows best in nutrient rich still or slow moving waters such as ditches, canals, ponds, lakes and rivers. It grows best at a water temperature of 68 - 86°F. It can only tolerate salinity levels of 10‰ that of sea water.

**Native Range:**

Southeastern Brazil and Northeastern Argentina.

**Distinguishing Features:**

It is a fresh water species. It has no roots with irregularly branched stems. Each plant has two green floating leaves and one brown, highly divided submerged leaf. The stalks of leaves resemble small egg beaters by dividing into four thin branches and then reconnecting at the tips to form a cage. Egg shaped sporocorps with a slender point develop in long chains among the underwater leaves.

**Pathways of spread:**

Giant *Salvinia* was first imported by the pet trade to be used in aquariums and garden ponds. Since then, it has escaped into the wild. Once in a water way, it will spread by flowing water, as well as boats and other equipments into new areas.

**Materials Examined:**

Kolavoi Lake is located in the Chingleput District which is 58 km away from Chennai City. It is one of the largest lakes in the Chingleput District. It is perennial lake, water has been used for agriculture, recreation and fishing activities and irrigating about 2000h area covers 12 nearby villages.

Paranur Station is rich in aquatic vegetation. In this location, Giant *Salvinia* infestation was occurred in the month of March 2012 – pre summer season. (fig.1). It was 6-8 cm in length. Giant *Salvinia* possesses pairs of floating green leaves attached to a branching stem that is submersed 2cm below the water surface. Finely dissected leaf with brownish root-like segments hangs below the stem to depths ranging from 4cm in the lake (Fig. 2 & 3). Aquatic

invasive species partially covered the water surfaces, formed mats and pH was measured as 7.5. Salinity was observed as 7‰.

### Biology:

Giant *Salvinia* possesses three different stages of growths (Aston and Mitchell 1989). The survival is found in adverse conditions. At this stage, the plant growth rate is low, and consists of four to five pairs of flattened leaves that are each below 1 cm in diameter. Colonizing stage is found in open water and the plant grows rapidly. During the mat stage, the plant completely covers the water surface and forms mat where the growth is restricted and relatively slow. When individual plants are transferred from one environment to another, they adapt themselves to grow in a new environment and thus increase their population.

Giant *Salvinia* is an important plant host of organisms as it provides shelter for mosquitoes responsible for the transmission of encephalitis, malaria and dengue fever (Creagh 1991/1992).

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**Fig. 1 Infestation of *Salvinia molesta* Mitchell at Kolavai Lake *Salvinia molesta* Mitchell forms dense mats that can cover entire Kolavai Lake.**



Fig.2. Mature *Salvinia molesta* Mitchell, showing the overlapping and deeply folded fronds



Fig.3. The submerged frond is feathery and acts like a root



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