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# Traditional usages of ichthyotoxic plant *Barringtonia asiatica* (L.) Kurz. by the Nicobari tribes

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**Abstract** The *Barringtonia asiatica* is a medium size tree commonly found in Car Nicobar Island known for its ichthyotoxic property. It grows on sandy and rocky shore areas and has lantern shaped seeds, locally called *Kinyav* used during the calm season in shallow and low tide waters for killing fishes, octopus, etc. At every successful operation they harvest about 1–3 kg and on the whole about 10–20 kg of fishes per trip. This method of fish catching was popular among the Car Nicobari tribes until massive tsunami of 26th December, 2004, which caused dislocation of tribes from their erstwhile coastal inhabitations to interior areas, damage of coral reefs, permanent water intrusion in the intertidal area and destruction of *Kinyav* trees. Hence, now-a-days the popularity of this fishing method among them has diminished. The study not only reveals the usefulness of seeds in harvesting of fishes but also the utilization of other parts of tree such as leaves for therapeutic purpose in fracture, wound, de-worming, pain relieving of human beings; log for construction of canoe, wooden houses, sitting stage, handicraft items, fire wood and whole tree for preventing the coastal erosion.

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### Introduction

Andaman Nicobar Islands (ANI) is a union territory of Republic India, located in the Bay of Bengal, blessed with

enchanting beauty of white sandy beaches, blue colour sea and biologically rich flora and fauna. The capital of ANI is Port Blair situated about 1200 km from mainland. This archipelago with an area of 8249 sq.km is divided into three districts namely South Andaman, North & Middle Andaman and Nicobar. The native people of these Islands belong to two races viz., Onges, Jarwas, Sentinels, and Great Andamanese,

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who are of Negroids and are restricted within the Andaman Islands and Nicobarese and Shompens, who are of Mongoloid race and mostly restricted with in Nicobar group of Islands (Singh et al., 2012). Among all native tribes of ANI, the population of Nicobarese have grown over time. A significant proportion of their population lives in Car Nicobar Island which is the Capital of Nicobar district. Their socio-economic status and livelihood highly depend on coconut farming (Salam et al., 2010), Piggery and marine fisheries. They harvest the fishery resources for their sustenance by employing indigenous techniques and modern fishing gears like spear, harpoon, hook and line, gillnet, cast net, troll line, shore seine, light fishing and plant poison (Zamir Ahmed et al., 2013). Fish poisoning was mainly considered as women fishing method, irrespective of adult genders employed in this type of fishing during the low tides. The tree *Barringtonia asiatica* is used as fish poison in various countries from Madagascar to Tahiti, including the Nicobar Islands of India, Celebes, Philippines, the Marianas, New Britain, Solomon Islands, Queensland, Fiji, Samoa, and most of Polynesia which includes Tahiti and the Marquesas (Quigley, 1956). Shompens of Great Nicobar Island utilize the seed for poisoning the fishes and trunk of the tree for making canoe (Elanchezhilan et al., 2007) while the Onges of consumes its seeds after toasting (Bhargava, 1983).

Among all the fishing methods practiced by the Nicobarese tribes, fish poisoning or stupefying by *B. asiatica* seeds locally called as *Kinyav* deserves special mention. Since the tree not only plays a vital role in harvesting of small to medium size fishes but also for various other purposes like healing diseases, making of canoe constructing of sitting stage, house, fire wood and handicrafts. The 2004 *Tsunami* hit Car Nicobar Island very hard and damaged 70% of the coral reef area (Saxena et al., 2008) which in turn destructed the fishing ground and lead to water intrusion in the intertidal areas. The trees were also damaged and washed away. Due to the devastation of coastal fishing ground, reduction in number of trees, unavailability of the seeds and introduction of modern fishing gears, the popularity of traditional practices like fish poisoning is fading in Car Nicobar. Even though there are many uses from this tree, very limited information is available on them and this paper aims to document the details of the traditional practices of the Nicobarese and the scope of reviving their usage among them.

## Methodology

The Nicobarese are spread into 13 out of total 28 Nicobar groups of Islands (Anon, 2006). The Car Nicobar Island which lies between 9° 00' and 9° 20'N latitude and 92° 30' and 92° 50'E longitude (Verma et al., 2010) and spread over an area of 126.9 sq.km. The study was conducted from February, 2013 to June, 2013 at Car Nicobar Islands on the traditional use of *Kinyav* (*B. asiatica*) tree in harvesting of fishes, treating of human ailments and others. For the study a total of 50 fishermen including fisherwomen and local doctors were selected from 6 villages namely, Kakana, Malacca, Perka, Big Lapathy, Kinmai and Arong. The information were collected through participatory research tool such as personal interview, group discussion and personal observation also from secondary data's.

## Result and discussion

The *B. asiatica* is a medium sized tree found around sandy and rocky shores of Car Nicobar. It has long leaf (Fig. 1a), beautiful flower and box or lantern shaped fruit (Fig. 1b) which is extremely water resistant and buoyant. The flowers of this tree are white with pinkish edge and the fruits can be found in the intertidal area of sandy and rocky beaches (Fig. 1c). It is very common that one can find the newly germinated seed along the shore side (Fig. 1d). Fishing using these seeds is mainly carried out in the dry and calm season of March to May months.

### Seed collection

Even though all the parts of the tree are poisonous, seeds are only used for killing the fishes in this Island. The ichthyotoxic property of the seeds is attributed to Saponin in the *Barringtonia* seeds (Barrau, 1955). Both mature (ripened) and immature (green) fruits are collected for this purpose (Fig. 1e). In case of mature fruits, it is collected from underneath the tree or in the beach areas since, it drops off once the outermost layer turns from green to brown and the immature fruits are plucked directly from the tree. Usually a day before fishing, the Nicobarese collect the fruit and store it in a jute sack (Fig. 1f). Since it is poisonous, in order to avoid accidental consumption of these fruits by children or livestock, the tribes do not store the collected fruits at their dwelling places.

### Grating

The collected matured and immature fruits are cut (Fig. 1g), outer layers stripped off (Fig. 1h) and the seeds (Fig. 1i) are separated. Later it is grated on the same day at the fishing site or a day before venturing into sea. The plant branch with thorny stump locally called *kunial* (Fig. 1j) is used for grating. The thorny stump of 1m height is kept vertically by resting one end at the ground the seeds were firmly moved up and down against the stump to get pulp.

### Site selection

The success of this method depends on the selection of correct site and time (Fig. 1k). The lowest low tides and preferably full moon day time is selected for this type of fishing. The spring tide of the new moon fills the pools and inundated places with sea water in the intertidal area (Fig. 1l), where the water gets stagnated along with fish for longer duration and is exposed during low tide. For selecting the suitable area, skilled tribal fishers visit the intertidal area and check the presence of fish and depth of the stagnated waters by naked eye. Usually knee depth water is selected for this purpose. Even though this Island does not have any natural spring, due to heavy rain pour, seasonal streams, fresh water stagnation around the Island lodge small fishes, eel and freshwater prawns, which are harvested seasonally using the ichthyotoxic seeds.

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