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## Ecology and Behavioral changes in spider *Argiope anasuja* (female)

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### ABSTRACT

*The Giant cross spider Argiope anasuja Thorell 1887 is amongst the poorly studied spiders. Being dominant in the study area of Khandala Tahsil, its ecological and behavioral study was carried out. Three specimens of it were kept under observation from Sept to Nov 2010 with 36 hours of continued direct observation. Investigation for sight-selection, web-constructing strategies and prey-selection was carried out. Also, direct observations were made for the predating practices, behavioral changes with weather changes, along with diurnal activities and many amazing facts have been revealed.*

**Keywords:** Giant cross, Khandala, sight-selection, prey-selection.

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### INTRODUCTION

Of amongst the 42055 species discovered till date (Platnick N.I.), *Argiope anasuja* belongs to the family Araenidae consisting of 168 genus and 3006 species. The giant cross spider also known as 'Signature spider' have been attracting eyes due to its fluorescent colors; and the standard peculiarity of X shaped arrangement of its limbs when at rest or in a stance waiting for the prey is solely enough to identify these spiders. Being spiders they obviously bear eight legs out grown from the cephalothorax and the abdomen separated by a delicate pedicle.

#### Study area and Methods:

The study for the study was confined to the Khandala Tahsil (  $18^{\circ} 12''$  N Lat &  $74^{\circ} 10''$  E Long; +556m msl) of Maharashtra State, India. The climate in the system under study is arid to semi arid. Rainfall is irregular and scanty (504 mm).

Various areas where these spiders were sighted were sealed to prevent human interference. Records were made Some collections were also made taking proper precautions using plastic bottles as the authors had recently spotted the venomous black widow Red back spider

(*Latrodectus hasselti* SIMON 1897). The spiders were then preserved in 70% ethyl alcohol. The spider was identified using the key available in Fauna of India: Araneae by Tikader, Spiders of India by T. Sebastian, and Fauna of British India: Arachnida by R.I. Pocock.

### Ecology and Behavior:

These spiders are expert weavers and build orb type of webs as shown in the fig [ **Orb web**]. These webs are concentric polygons and straight elastic threads running radially from centre and through the angles, terminating to the firm rigid support. The threads are glued to the rigid support by heavy secretion of liquid silk which dries immediately and adheres the web firmly. This glue is heavy concentrations of proteins.

As the name suggests, every organism of these genera possesses their own typical **signature** [fig] on their orb webs. The signs are some inelastic arrangements of shiny white broader zig-zag (appearing) lines on which the spider is mostly found resting or at stationary waiting for the prey. These signs are an external attachment on the web like the helipads arranged for the copters; and probably facilitate as a spongy cushion to the spider during resting.

When something approaches the web; the spider instantly goes behind the signature if the object is larger than the spider. If the approaching object is smaller; the spider remains in position and bends outwards the femur and patella of IV<sup>th</sup> pair of leg, tapping the abdomen on the web creating vibrations throughout; thus signaling alert to the one.

At rest when the spider has had enough, it arranges legs in loosely **X** shape, while in a position to attack, it remains in an erect **X** shape. The position of the spider in the web is a witty act and appreciable since in its orb web; it stays at the center ensuring that any predator wishing to attack the web host will have to pass through many hurdles. Meanwhile, the spider gets time to migrate; and the predator gets trapped in the web; thus turning into prey! The webs are always in slanting position and the spider is in inverted position. If any prey or a small enough (even non-living) object than the spider falls on the web by any means, it runs immediately to that venue and wraps the object in a peculiar manner by coursing the silk threads through the spinnerets and combing through the III<sup>rd</sup> pair of legs forming a bundle.

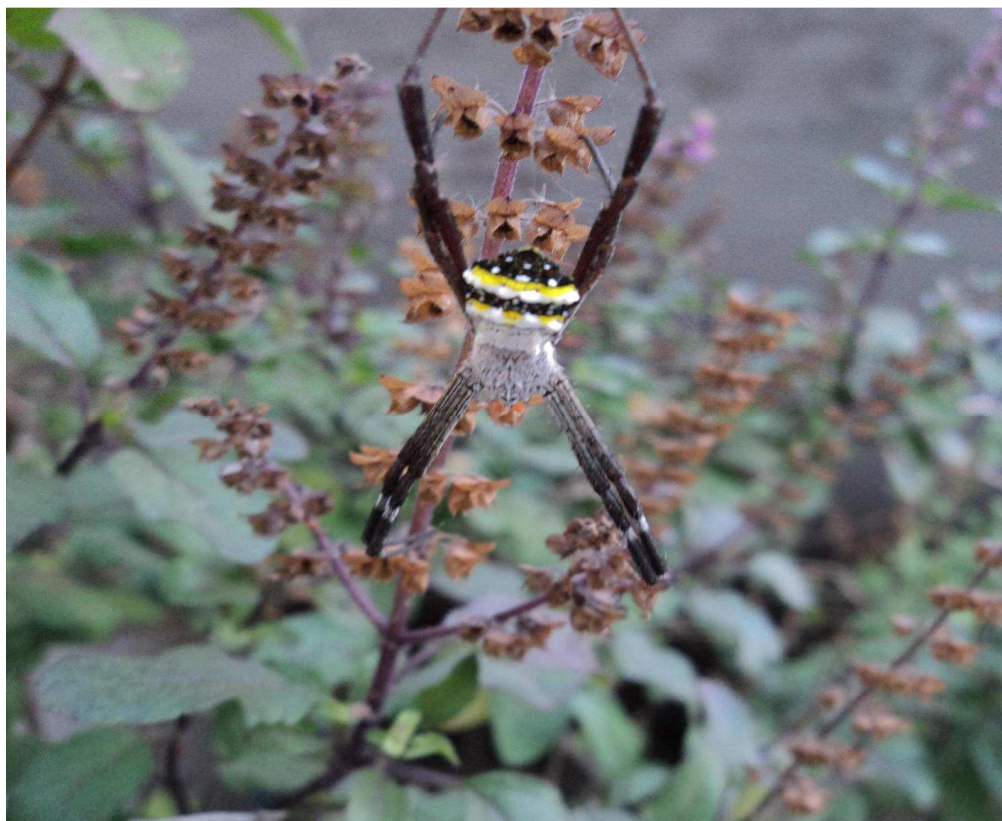
These spiders are commonly seen on flora of Mimosaceae family and sometimes on the human settlements at some feet above the grass. They always prefer a plane of shadow in the daylight for construction of webs; usually at an altitude of not more than 15 feet above the ground.

The palps bear spines which facilitate teasing the prey and holding it. While feeding, they are erected so that the prey is held exactly in front of the anterior row of eyes. The feeding mechanism is common among most spiders. In fact, it is less bothered since the palps and chelicerae are difficult to observe by naked eyes during feeding and spiders won't feed under our microscopes!

The rains or heavy deposition of dew drops on their webs make no harm as the silk threads resist water deposition and are water insoluble; so the droplets drain away after some time.







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