Journal of Entomology and Zoology Studies

Available online at www.entomoljournal.com

E-ISSN: 2320-7078
P-ISSN: 2349-6800
JEZS 2019; 7(1): 938-943

Received: 14-11-2018
Accepted: 18-12-2018

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# Survey of red weaver ants (*Oecophylla smaragdina*) and their host plants in urban and rural habitats of Madurai District, Tamil Nadu, India

**Thangavel Rajagopal, Pitchai Singam, Subbiah Kulandaivel, Subbiah Selvarani, Subramanian Sevarkodiyone and Ponnirul Ponmanickam**

**Abstract**
The present study was undertaken a survey of host plants of red weaver ant in two different habitats such as rural and urban areas of Madurai (9.93°N, 78.12°E), Tamil Nadu during May, 2015- December, 2015. All out search method was used to list the occurrence of red weaver ant on plants and also counted the number of their nests on the host plants. The red weaver ants built their nests on 23 plant species in both rural and urban habitats, among these, thirteen plant species (range of nos. of nests 2 - 10) in urban and twenty two species (range of nos. of nests 5 - 15) in rural areas. The more number of nesting was noticed on *Mangifera indica*, whereas, less number of nesting was found to be in the host plants of *Nerium odorum*, *Cocos nucifera* L., *Tamarindus indica* etc. The highest relative abundance of nesting's of red weaver ants were recorded during October, November and December 2015, whereas lowest during June, July and August 2015. The red weaver ants weaving the nest on some selected plants in both urban and rural habitats by establishing their colonies. The occurrence of nesting may due to the influence of environmental factors that would limit the growth and distribution of ants on its host plants. The present study indicates the existence of mutualistic interactions between plants and red weaver ants.

**Keywords:** Red weaver ant, nest, density, host plant and Madurai district

## Introduction
Insects are found in almost everywhere on the earth's surface except at the poles and on the peaks of highest mountains [9, 13]. Globally, there are about 12,571 extant ant species, as per the recent classification, all ants are grouped into 22 subfamilies [5, 8] and all the ants species fall into the single family Formicidae. The current status of ant species in Indian subcontinent records includes 10 subfamilies representing 828 species and 100 genera [4].
The red weaver ant of the genus *Oecophylla* is prominent member of the forest insect communities' throughout the entire tropical world except America. The two extant species are quite similar in morphology and behavior, but display some color variation *O. smaragdina* ranges from tropical Asia to Northern Australia, and onto some Western Pacific Islands. The Asian species, *O. smaragdina* have a uniform reddish- brown colour [42]. The African species *O. longinoda* (Latr.) varies from reddish brown to dark brown [23, 21]. The potential of these species as a biological control agent has been supported by many crop studies in which the ants were reported as being beneficial predators. Such crops include coconut, oil palm, cocoa, coffee, citrus, eucalyptus, mango, cashew nut, and timber tree [41, 28].
To date, there have been several reports available on ecology and distribution of host plants of *Oecophylla smaragdina* [4, 23, 21, 24, 2]. But hither to there is no reports on comparative analysis of host plants of *Oecophylla smaragdina* in urban and rural habitats. Hence, the present investigation was made on carried out to survey the listing the occurrence of red weaver ant and its host plants in urban and rural habitats of Madurai district, Tamil Nadu, India.

## 2. Materials and Methods
### 2.1. Study Sites
The study sites (9.93°N, 78.12°E) were broadly grouped into two categories namely rural (agricultural fields, riverine areas, in and around areas of villages like Mettupatti, Meenatshipuram, Thirumanickam and Thadaiyampatti), relatively less disturbed and urban (industrial and residential areas), relatively more disturbed habitats in Madurai District, Tamil Nadu, India.

### 2.2. Data Collection

The study was carried out for eight months from May 2015 to December 2015. All out search method was used for the observation of ants and host plants from the study sites. The field study made the search for host plants along with nest of red weaver ants for three hours from 06.00 to 09.00 AM in each case. The field trips were conducted in monthly twice at different parts of the study areas. Host plants of red weaver ants were counted and assessed the number of nest on the host plants were also calculated. The dried specimens of the host plants were identified with the help of Dr. D. Kannan, Associate Professor, Department of Botany, Thiagarajar College (Autonomous), Madurai. The meteorological data (Temperature and Rain fall) were procured from the Meteorological Department, Madurai, Tamil Nadu.

Density and Relative abundance of red weaver ants and their nest was carried out following the method of Micheal [20].

## 3. Results and Discussion

There are many reports available on urbanization threats to biodiversity. But the comparative study on red weaver ants (*O. Smaragdina*) and their host plants preferences in rural and urban areas are very scanty. In the present study, the occurrence of red weaver ant and their host plants were identified. The total numbers of nesting of red weaver ants present on different plants species at different habitats were calculated (Table 1). The survey showed the presence of 23 species of red weaver ant built their nests on host plants in both habitats, among these 13 species occurred in plants of urban and 22 species in plants of rural habitats. It indicates the urbanisation disturbs the nesting behaviour of red weaver ants. Generally, the choice of host plant appears to depend partly on the ease with which the leaves can be used to form nests and partly on the ability of the host plant to support suitable some Homopteran insects from which the ant can obtain honey-dew for food [33, 39]. During the observation, some insects were found to be associated with ant nests on some selected plant species, for example, citrus and mango trees etc. It is reported that the urban environment is a major threat to biodiversity, especially to affect the abundance of ant species diversity and the urbanization is responsible for species extermination and biotic homogenization [7].

It is noticed that there are 176 nests were observed during starting study period (29 nos. of nest in urban; 147 nos. of nest in rural) and 523 at the end of the study periods (119 nos. of nest in urban; 404 nos. of nest in rural) in both habitats. It was also noted that ranges of 2 - 10 nos. of nests were built per tree in urban habitats, whereas 5-15 nos. of nests were built per tree in rural habitats areas. The results indicate that the more number of nesting was observed in the rural when compared to that of urban habitats. In urban habitats, the frequency of nesting was poor due to frequent human interference. Dash *et al*. [10] found that the industrial waste and sewage almost always reduce the diversity of ants in the urban habitats. It is evident that ant species nesting density generally increased with increase in vegetation and declines with increase in disturbances [15].

In the present study, more number of nesting was noticed on *Mangifera indica* (30.69 %) followed by *Azadirachta indica* (22.02 %), *Pongamia pinnata* (16.08 %) and *Citrus acids* (7.92 %) in both habitats. Out of two different habitats, number of nesting was found to be less in the host plants of *Nerium odorum*, *Cocos nucifera*, *Tamarindus indica* and *Annona squamosal* in urban areas, whereas *Nerium odorum*, *Borassus flabellifer*, *Ficus benghalensis*, *Acacia nilotica* and *Propopis juliflora* in the rural areas. The highest density of nesting was noticed on *Citrus acids* (10.22 %), *Mangifera indica* (10.02%), followed by *Psidium guajava* (9.33 %), *Morinda citrifolia* (8.93 %), *Manilkara zopota* (7.74%) etc. in the rural habitats. Similar findings was reported by Kenne *et al*. [14] in red weaver ants habitation descend on many kinds of plant species including domesticated fruit trees such as *Citrus maxima*, *Mangifera indica*, *Theobroma cacao*, *Garcinia mangostana*, *Lansium domesticum* and *Syzygium aqueum*. Ozaki *et al.* [25] also found that red weaver ant species efficiently protected their host plants against the scale insects. Hosetti and Rudresh [11] reported that the number of pentatomid bugs colony found on branches of tree was significantly lower in tree with abundant weaver ants than in trees without ants. There are several reports of the red weaver ants (*O. smaragdina*) form nests on more number of host plant species and is an effective biological control agent on host plants (including cultivated crops and trees) such as mango, coconut, cocoa, citrus, cashew, mahogany tree, mangrove tree, timber tree, etc. (Table 2), that is the many farmers called the red weaver ant as a "Living Pesticides" [29]. The results suggest that the *O. smaragdina* had established their colony on the selected flowering plants and control the some insect pest in order to protect their host plant.

In the present study, it was noticed that some cultivated plants are also as a host plant for red weaver ant; *Annona squamosal*, *Carica papaya*, *Nerium odorum* and *Manilkara zopota* (both in urban and rural areas). Lack of proper management and the presence of infested trees nearby might be the reason for occurrence of red weaver ants on cultivated plants [15,3]. During the observation, the red weaver ants without nest were observed in the plants such as *Propopis juliflora*, *Carica papaya* L and *Hibiscus rosa sinensis* in urban habitats. The red weaver ants were observed in deciduous plants such as *Ficus* sp. and *Ficus benghalensis*, but the number of nesting was very low compared to other flowering plants. Kumaresan [15] found that the evergreen plant species were more suitable for nesting than deciduous plants.

In the present investigation, density and relative abundance of nesting of red weaver ant was higher during October, November and December 2015 and lower during June, July and August 2015 (Table 3). Temperature and rainfall are most important factors in an environment since it influences the growth and distribution of insects and plants population [38]. These two factors may alter the occurrence and abundance of nest in various ways. From the investigation, it in noticed that the rainfall and abundance of nesting was positively correlated (urban: n = 8, r = 1.82; rural: n = 8, r = 1.13), whereas the temperature and occurrence of nesting was negatively correlated (urban: n = 8, r = -0.85; rural: n = 8, r = -0.51) (Table 4). It is reported that the rainfall and temperature are universal influencing factor and is frequently act as a limiting factor for the growth or development or distribution of insects and plants [12, 32]. The ant species diversity and abundance in a niche is closely related to resources availability, both in terms of physical suitability of habitat and the chemical environment [1].

**Table 1:** Occurrence and Nesting of Red Weaver Ants on the host plants of different habitats

| S. No. | Name of the plant | | Family | URBAN | | | | | RURAL | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Botanical Name | Vernacular Name (Tamil) | | NPS | NPWA | NNPP | D | RA | NPS | NPWA | NNPP | D | RA (%) |
| 1 | *Pongamia pinnata* | புங்க மரம் | Papilionoideae | 25 | 10 | 65 | 8.12 | 16.08 | 50 | 35 | 120 | 15.00 | 5.95 |
| 2 | *Acacia nilotica* | கருவேல மரம் | Fabaceae | 25 | - | - | - | - | 150 | 20 | 23 | 2.87 | 1.14 |
| 3 | *Prosopis juliflora* | சீமைகருவேலம் | Mimosoideae | 0 | 5 | - | - | - | 85 | 35 | 27 | 3.37 | 1.34 |
| 4 | *Adrina cordiofolia* | மஞ்சகடம்பு | Rubiaceae | 0 | - | - | - | - | 80 | 50 | 93 | 11.62 | 4.61 |
| 5 | *Psidium guajava* | கொய்யா மரம் | Myrtaceae | 30 | 8 | 22 | 2.75 | 5.44 | 100 | 55 | 188 | 23.5 | 9.33 |
| 6 | *Ficus religiosa* L | இத்தி மரம் | Moraceae | 0 | - | - | - | - | 20 | 6 | 23 | 2.87 | 1.14 |
| 7 | *Ficus benghalensis* | ஆலமரம் | Moraceae | 0 | - | - | - | - | 25 | 5 | 8 | 1.00 | 0.39 |
| 8 | *Madhuca longifolia* (L) | இழுப்பை | Sapotaceae | 0 | - | - | - | - | 85 | 50 | 129 | 16.12 | 6.40 |
| 9 | *Holoptelea integrifolia* (Roxb) | ஆயா | Ulmaceae | 0 | - | - | - | - | 50 | 22 | 62 | 7.75 | 3.07 |
| 10 | *Polyathia longifolia* | நெட்டிலிங்கம் | Annonaceae | 30 | 5 | 21 | 2.62 | 5.19 | 50 | 15 | 59 | 7.37 | 2.92 |
| 11 | *Azadirachta indica* | வேப்பை | Meliaceae | 50 | 15 | 89 | 11.12 | 22.02 | 85 | 30 | 121 | 15.12 | 6.00 |
| 12 | *Annona squamosal* L. | சீத்தா | Annonaceae | 25 | 3 | 11 | 1.37 | 2.72 | 40 | 21 | 90 | 11.25 | 4.46 |
| 13 | *Citrus acids* L. | எலுமிச்சை | Rutaceae | 25 | 15 | 32 | 4.00 | 7.92 | 80 | 37 | 206 | 25.75 | 10.22 |
| 14 | *Tamarindus indica* | புளிய மரம் | Caesalpinioideae | 10 | 5 | 13 | 1.62 | 3.21 | 50 | 15 | 126 | 15.75 | 6.25 |
| 15 | *Carica papaya* L | பப்பாளி | Caricaceae | 20 | 5 | - | - | - | 80 | 5 | 54 | 6.75 | 2.68 |
| 16 | *Cassia fistula* L. | கொன்றை | Caesalpinioideae | 0 | - | - | - | - | 85 | 20 | 83 | 10.37 | 4.12 |
| 17 | *Mangifera indica* L. | மாமரம் | Anacardiaceae | 25 | 18 | 124 | 15.50 | 30.69 | 60 | 25 | 202 | 25.25 | 10.02 |
| 18 | *Borassus flabellifer* L. | தாலம் | Arecaceae | 0 | - | - | - | - | 35 | 4 | 11 | 1.37 | 0.54 |
| 19 | *Cocos nucifera* L. | தென்னை மரம் | Arecaceae | 25 | 5 | 7 | 0.87 | 1.73 | 50 | 15 | 43 | 5.37 | 2.13 |
| 20 | *Nerium odorum* | அரளி | Apocynaceae | 20 | 2 | 3 | 0.37 | 0.74 | 80 | 12 | 10 | 1.25 | 0.49 |
| 21 | *Hibiscus rosa sinensis* | செம்பருத்தி | Malvaceae | 20 | 5 | - | - | - | 0 | - | - | - | - |
| 22 | Manilkara *zopota* (L) P. Royen | சப்போட்டா | Sapotaceae | 25 | 10 | 17 | 2.12 | 4.20 | 80 | 35 | 156 | 19.50 | 7.74 |
| 23 | *Morinda citrifolia* | மஞ்சணத்தி | Rubiaceae | 0 | - | - | - | - | 35 | 35 | 180 | 22.50 | 8.93 |

**Abbreviation: NPS**: Number of Plants Studied; **NPWA**: Number of Plant with Ants; **NNPP**: Number of Nests present in the Plants; **D**: Density; **RA**: Relative Abundance

**Table 2:** Report of *Oecophylla smaragdina* as beneficial predator as well as bio-control agents of various insect pests on many plants

| Name of the plant | Control the Insect Pest | Reference |
|---|---|---|
| Mango | Leafhopper, *Idioscopus nitidulus* | Peng and Christian [27]. |
| | Mango hopper, *Amritodus atkinsoni* | Bharti and Silla [3]. |
| | Mango mealy bug, *Dorsicha mangiferae* | Bharti and Silla [3]. |
| | Mango stem borer, *Bactocera rufomaculata* | Bharti and Silla [3]. |
| | Mango fruit fly, *Bactocera dorsalis* | Bharti and Silla [3]. |
| | Mango bud mite, *Aceria mangiferae* | Bharti and Silla [3]. |
| | Red-banded thrips, *Selenothrips rubrocinctus* | Peng and Christian [27]. |
| | Mango tip borer, *Penicillaria jocosatrix* | Peng and Christian [27]. |
| | Fruit spotting bug, *Amblypelta lutescens lutescens* | Peng and Christian [27]. |
| | Seed weevil, *Sternochetus mangiferae* | Peng and Christian [27]. |
| | Fruit fly, *Bactrocera jarvisi* | Peng and Christian [27]. |
| | Giant termite, *Mastotermes darwiniensis* | Peng and Christian [27]. |
| | Dimpling bug, *Campylomma austrina* | Peng and Christian [28]. |
| Coconut | Coconut bugs, *Pseudotheraptus wayi* | Vanderplank [37]. |
| | Coconut bugs, *Pseudotheraptus devastans* | Julia [13]. |
| | Cassava shoot dieback, *Amblypelta cocophaga* | Brown [6]. |
| | Coconut spathe bug, *Axiagastus cambelli* | Lever [16]. |
| | Leaf beetle, *Brontispa longissima* | Stapley [36]. |
| | Coconut leaf miner, P*romecotheca* spp. | Murray [22]. |
| Cocoa | Tea mosquito, *Helopeltis theobromae* | Way and Khoo [40]. |
| | Cocoa capsid, *Distantiella theobroma* | Leston [17]. |
| | Fruits potting bug, *Amblypelta theobromae* | Room and Smith [35]. |
| Citrus | Citrus stink bug, *Rhynchocoris humeralis* | Mele *et al*. [19]. |
| | Citrus psylla, *Diaphorina citri* | Bharti and Silla [3]. |
| | Citrus whitefly, *Dialeurodes citri* | Bharti and Silla [3]. |
| | Citrus blackfly, *Aleurocanthus woglumi* | Bharti and Silla [3]. |
| | Citrus caterpillar, *Papilio demoleus* | Bharti and Silla [3]. |
| | Fruit sucking moths, *Ophideres* sp. | Bharti and Silla [3]. |
| | Citrus blossom midge, *Desineura citri* | Bharti and Silla [3]. |
| | Aphids, *Toxoptera aurantii* | Mele *et al*. [19]. |
| | Aphids, *Toxoptera citricidus* | Mele *et al*. [19]. |
| | Leaf miner, *Phyllocnistis citrella* | Mele *et al*. [19]. |

| | | |
|---|---|---|
| | Leaf-feeding caterpillars, *Papilio* sp. | Mele *et al*. [19]. |
| Cashew | Coconut bugs, *Pseudotheraptus wayi* | Peng [31]. |
| | Coconut bugs, *Pseudotheraptus devastans* | Peng [31]. |
| | Mosquito bugs, *Helopeltis anacardii* | Peng [31]. |
| | Mosquito bugs, *Helopeltis schoutedeni* | Peng [31]. |
| | Tea mosquito bug, *Helopeltis pernicialis* | Peng *et al*. [26]. |
| | Mango tip borer, *Penicillaria jocosatrix* | Peng *et al*. [26]. |
| | Fruit spotting bug, *Amblypetta lutescens* | Peng *et al*. [29]. |
| | Giant coreid bug, *Anoplocnemis curvipes* | Peng [31]. |
| | Alydid bugs, *Riptortus* sp1 | Peng [31]. |
| | Alydid bugs, *Riptortus* sp1 | Peng [31]. |
| | Red-banded thrips, *Selenothrips rubrocinctus* | Peng [31]. |
| | Brown scales, *Udinia catori* | Peng [31]. |
| | Trunk borers, *Mecocorynus loripes* | Peng [31]. |
| | Trunk borers, *Apate telebrans* | Peng [31]. |
| Mahogany tree | Shoot borer, *Hypsipyla robusta* | Reilly *et al*. [34]. |
| | Fruit spotting bug, *Amblypelta lutescens* | Peng *et al*. [30]. |
| | Yellow looper, *Gymnoscelis* sp. | Peng *et al*. [30]. |
| | Crusader bug, *Mictis profana* | Peng *et al*. [30]. |
| | Leaf roller, *Anarsia* sp. | Peng *et al*. [30]. |
| | Bizarre looper, *Anisozyga megaspila* | Peng *et al*. [30]. |
| Mangrove tree | Scale insect, *Aulacaspis marina* | Offenberg *et al*. [41]. |
| | Chrysomelid beetles, *Chrysophtharta sp.* | Offenberg *et al*. [41]. |
| Timber tree | Shoot borers, *Hypsipyla robusta* | Lim and Kirton [18]. |

**Table 3:** Presence (+), absence (-) of the ants and the number of the nests of the ant, *Oecophylla* seen on the host plants in the Urban (U) versus Rural (R) habitats during the period (May, 2015 - December, 2015) of study

| Si. No. | Botanical Name | Urban habitat | | | | | | | | Rural habitat | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Number of Nest | | | | | | | | Number of Nest | | | | | | | |
| | | **M** | **J** | **J** | **A** | **S** | **O** | **N** | **D** | **M** | **J** | **J** | **A** | **S** | **O** | **N** | **D** |
| 1 | *Pongamia pinnata* | 5 | 5 | 3 | 3 | 10 | 12 | 12 | 15 | 12 | 12 | 8 | 8 | 15 | 20 | 20 | 25 |
| 2 | *Acacia nilotica* | - | - | - | - | - | - | - | - | + | + | + | + | + | 5 | 8 | 10 |
| 3 | *Propopis juliflora* | + | + | + | + | + | + | + | + | 2 | + | + | + | + | + | 10 | 15 |
| 4 | *Adrina cordiofolia* | NS | NS | NS | NS | NS | NS | NS | NS | 8 | 8 | + | + | 10 | 15 | 22 | 30 |
| 5 | *Psidium guajava* | 2 | 2 | + | + | + | 5 | 5 | 8 | 18 | 15 | 15 | 15 | 20 | 32 | 35 | 38 |
| 6 | *Ficus religiosa* L | NS | NS | NS | NS | NS | NS | NS | NS | + | - | - | - | 3 | 5 | 5 | 10 |
| 7 | *Ficus benghalensis* | NS | NS | NS | NS | NS | NS | NS | NS | - | - | - | - | + | + | 3 | 5 |
| 8 | *Madhuca longifolia* (L) | NS | NS | NS | NS | NS | NS | NS | NS | 10 | 10 | 7 | 7 | 15 | 15 | 30 | 35 |
| 9 | *Holoptelea integrifolia* (Roxb) | NS | NS | NS | NS | NS | NS | NS | NS | 8 | 5 | + | + | 10 | 12 | 12 | 15 |
| 10 | *Polyathia longifolia* | - | - | - | + | 3 | 5 | 5 | 8 | 5 | 5 | 5 | 5 | 7 | 7 | 10 | 15 |
| 11 | *Azadirachta indica* | 8 | 8 | 5 | 5 | 10 | 15 | 15 | 23 | 15 | 15 | 8 | 8 | 10 | 15 | 25 | 25 |
| 12 | *Annona squamosal* L. | + | - | - | - | + | 3 | 3 | 5 | 8 | 8 | 8 | 10 | 10 | 15 | 15 | 16 |
| 13 | *Citrus acids* L. | + | - | - | - | + | 5 | 8 | 15 | 20 | 20 | 20 | 15 | 25 | 30 | 38 | 38 |
| 14 | *Tamarindus indica* | + | + | + | + | + | 3 | 3 | 7 | 8 | 8 | 10 | 10 | 10 | 25 | 25 | 30 |
| 15 | *Carica papaya* L | + | + | + | + | + | + | + | + | 5 | + | + | 6 | 8 | 10 | 10 | 15 |
| 16 | *Cassia fistula* L. | NS | NS | NS | NS | NS | NS | NS | NS | 8 | 5 | 5 | 5 | 10 | 15 | 15 | 20 |
| 17 | *Mangifera indica* L. | 12 | 8 | 8 | 8 | 15 | 20 | 23 | 30 | 15 | 15 | 15 | 15 | 30 | 35 | 35 | 42 |
| 18 | *Borassus flabellifer* L. | NS | NS | NS | NS | NS | NS | NS | NS | + | - | - | - | + | 3 | 3 | 5 |
| 19 | *Cocos nucifera* L. | + | - | - | - | + | + | 2 | 5 | 5 | 5 | 5 | + | + | 8 | 10 | 10 |
| 20 | *Nerium odorum* | + | + | - | - | + | + | + | 3 | + | - | - | - | + | + | 5 | 5 |
| 21 | *Hibiscus rosa sinensis* | - | - | - | - | - | + | + | + | NS | NS | NS | NS | NS | NS | NS | NS |
| 22 | *Manilkara zopota* (L) P. Royen | + | + | - | - | - | + | 5 | 12 | 12 | 10 | 10 | 10 | 20 | 25 | 30 | 38 |
| 23 | *Morinda citrifolia* | NS | NS | NS | NS | NS | NS | NS | NS | 10 | 10 | 10 | 10 | 30 | 30 | 38 | 42 |

**Abbreviation**

-: ants and nests are absent +: ants only present but not their nest NS: Plants are Not Studied
M: May; J: June J: July A: August
S: September O: October N: November D: December

**Table 4:** Average temperature, rainfall and number of nests of Red weaver ant, *Oecophylla* in urban and rural habitats during the period (May, 2015 to December, 2015) of study

| S. No. | Month | Temp. (°C) | Rainfall (mm) | Urban Habitat | | | | Rural Habitat | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | No. of plant species | No. of nest | Nests | | No. of plants species | No. of nest | Nests | |
| | | | | | | Density | Relative Abundance (%) | | | Density | Relative Abundance (%) |
| 1 | May 2015 | 30.1 | 227.04 | 13 | 29 | 2.23 | 7.17 | 22 | 165 | 7.50 | 8.19 |
| 2 | June 2015 | 32.8 | 36.00 | 13 | 25 | 1.085 | 6.18 | 22 | 151 | 6.86 | 7.49 |
| 3 | July 2015 | 33.3 | 0.00 | 13 | 16 | 1.23 | 3.96 | 22 | 126 | 5.72 | 6.25 |
| 4 | August 2015 | 32.2 | 47.00 | 13 | 16 | 1.23 | 3.96 | 22 | 124 | 5.68 | 6.20 |
| 5 | September 2015 | 31.4 | 123.04 | 13 | 38 | 2.92 | 9.40 | 22 | 238 | 10.81 | 11.81 |
| 6 | October 2015 | 30.5 | 125.06 | 13 | 68 | 5.23 | 16.83 | 22 | 322 | 14.63 | 15.98 |
| 7 | November 2015 | 29.6 | 287.05 | 13 | 81 | 6.23 | 20.04 | 22 | 404 | 18.36 | 20.05 |
| 8 | December 2015 | 28.4 | 255.00 | 13 | 131 | 10.07 | 32.42 | 22 | 484 | 22.00 | 24.03 |

## 4. Conclusion

Based on the observation, red weaver ant's occurrence and their nest in the some selected host plants by established their colony in both rural and urban habitats. It indicates *Oecophylla* ant selects the host plants in both habitats, but selection of host plants may Influenced by some environmental factors that would manipulate the distribution of red weaver ants on its host plants. The industrial pollution and human disturbances in the urban areas mask the nesting behaviour of ants in urban areas. Thus urbanization reduces the *Oecophylla* ant diversity and distribution. Hence, the pollution free environment would helpful to support the *Oecophylla* ant diversity.

## 5. Acknowledgements

The authors give thanks the Principal and the Management of Thiagarajar College (Autonomous), Madurai for providing the facilities and the constant encouragement.

## 6. References

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