Chapter II

LITERATURE REVIEW
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Fraser (1933, 1934, and 1936) published three volumes on Odonata in the ‘Fauna of British India including 536 species and subspecies of Odonata. In that there are 500 species of dragonfly (Anisoptera) which include 90 genera from India and there are 39 genera including 168 species and subspecies belonging from damselfly (Zygoptera). The odonata fauna of the Western Ghats comprised there are 174 species out of which there are 69 endemics, (Fraser, 1933, 34 &35; Prasad & Varshney, 1995 and Subramanian, 2009).

Radhakrishnan & Emiliyamma (2003), Ragnekar & Naik 2014 and Emiliyamma et al., (2012) also worked on the odonata fauna from Western Ghats from Goa, Maharashtra region. There are certain zoologists which studied diversity of odonates from Vidarbha region. Andrew 1995 reported 43 species of odonates from Bramhkumari (Chandrapur District); Andrew and Tembhare in 1997 reported 43 species; (Kalaskar & Kalaskar 1998; Tiple et al., 2008) reported 62 species of odonata from Nagpur city central India zone.

Tiple et al., (2008) reported that damselflies are mostly occurs in the the vicinity of the different rivers, Lakes, streams, marshes, Lake even though small pools and rice fields. As they are good envioroment in the envioromental changes as they are very much sensitive to the changes in the habitate, atmospheric temperatiretion and wether condition. They acted as a biocontrolling agent.

Andrew in (1995) added 51 species odonates in dragonfly fauna of central India. Andrew et al., 2010-13, revealed 43 species of odonates from three major dams Ambazari, Telenkhedi and Gorewada of Nagpur city. Andrew et al., 2010-13 reported most of the species which are breeding in Zilpi Lake are commonly found in the Nagpur city (central India).

Prasad (1996) while doing extensive survey on the odonates recorded 46 species from Maharashtra state out of which there are 7 species of odonates are records from Buldhana and 9 species from Vardha District from Vidarbha. Samway and Steytler (1996) recorded The 26 species of Odonata including 13 Zygoptera and 13
Anisoptera from Dorp spruit River, South Africa. Tyagi (1997) reported 491 species of odonates checklist from India.


Takhelmayum & Gupta (2014) made documentary based work on odonata larvae collected from Keibul Lamjao national park, in the year 2009-2011. This study revealed 15 species of the damselfly larvae belonging from Calopterygidae, Lestidae and Coenagrionidae. This research article suggested that odonata related important species should be conservation areas which are essential for proper management. Species of some of the Zygopterance include the study in this work are Neurobasis chinensis, Ceriogriion sp. Pseudagrion rubriceps, Ischnura senegalensis and Lestes Sp.

Mitra (2005) reported 9 species from Indravati Tiger reserve area, Chhattisgarh. Tiple (2012a) while doing the entomological survey on dragonflies and damselflies Achanakmar- Amarkantak Biosphere Reserve, Madhya Pradesh and Chhattisgarh, India reported there were 70 species of odonata out of which 25 species are damselflies belonging from family Coenagrionidae (15 species), Protoneuridae (3 species), Platycnemididae (2 species ), Chlorocyphidae (2 species) and Lestidae (3 species). Out of 70 species 24 are very common, 23 were common, 18 are rare, and 5 are very rare including Ceriogriion olivaceum.

Mitra (1995) reported as 48 species while doing taxonomical and bioversity analysis done on Indravati tiger reserve forest with 9 newly reported specimens. From the small place Prasad & Varshney (1995) also worked on the Indian Odonates with including Indian Odonata larval groups of studies of all the known the species. Srivastava & babu (1997) reported taxonomical studies of the damselflies of the Sager (MP).
In case of the Maharashtra many of the taxonomical reported zoologists from odonata groups studied species richness and diversity by Andrew (1995) from Brahmakumari and Chandrapur. Andrew and Tembhare (1997) also reported 43 species of the odonata from vidharbha region. Kalaskar and Kalaskar (1998) make studies from the Pench National Parks, Nagpur. Tiple et al., in 2008 reported 63 species of the Odonates fauna from the tadoba National park and revealed newly obtaining species of the Odonates.

Mitra (2007) also be reported as the studied data of the Madhya Pradesh and also be described a total 70 species belonging to the 40 genera and nine families distributed in different localities, but there is no any publication checklist over different species of the odonates so that in case of the TFRI campus showed good intimated diversity of the Odonates.

Achanakmar- Amarkantak Biosphere Reserve lies between lat. 22° 15’ to 20° 58’ North and long 81° 25’ North to 82° 5’ East. Biosphere reserve forest consists of three major rivers tributaries originated from the buffer zone Narmada, Johilla and Sone. This study area showed seasonal streams and rivers which helps to restore the sustainability of various fauna and flora of the odonata within the forest areas also.

Orr et al., (2004) reported that the Malaysian odonata fauna comprises about 342 species in which there were 161 species of the zygopterans. Tiple (2012b) reported total 64 species of odonata belonging from 41 genera and 9 families from Tadoba national park, Chandrapur district, Maharashtra, India. The extensive survey from Chandrapur and surrounding including fresh water bodies such as, ponds, streams, field grasslands, and forest areas recorded 5 families of damselflies with 12 genera. There are 23 species of damselflies had been reported from entire survey, with family Coenagrionidae (14 species), Lestidae (3 species), Chlorocyphidae (1 species), Protoneuridae (2 species), and Platycnemididae (3 species).

In Pakistan 34 species of the damselflies reported by Khaliq in (1990); while seven species of damselves also be revealed from Pakistan by Jehangir (1997). While in case of the India there are 214 species of the dmaselflies are reported metioned by
Kakkassery in 2005. Our sided contries from south side Srilanka has damselflies fauna about 54 species (Bedjanic, 2006). Nepal also located behind the Himalayan hills of the India also is showed 75 reported species of the damselflies (Singh, 1995).

This type of the work is needed to make taxonomical analysis to making upgrated the zygopterous fauna from Pune district which is the part of the northern Western Ghats. So depending upon this pan making to conduct extensive survey on various localities from the pune district where taluka wise zygoptera fauna which was explored.

Dijkstra (2004) reported species diversification on the odonata Philips corbet is president of the Cameroon Dragonfly Project (CDP) was establishment in 1995 by Graham Vick and David Chelmick of UK. Also reporting on the review of the odonates faunas of Ghana Benin, In collaboration with H.A. Olsvik and Tchibozo respectively.

Yum et al., (2010) made taxonomic review on the Korean Damselflies on the basis of the catalogued with synonyms, type, bibliographic information, localities, distribution, and taxonomic remarks. As a result of that they reported 35 nominal species which are belonging to 4 families are included as follows Calopterygidae, Coenagrionidae, Platycnemididae and Lestidae.

Tiple et al., 2012 reported 49 species of odonates with six new records for Madhya Pradesh from the Tropical Forest Research Institute Campus, Jabalpur. Tiple in 2012 recorded 70 species of odonates Achanakmar-Amarkantak Biosphere Reserve, Madhya Pradesh and Chhattisgarh, India. Sharma (2010) reported Lestes thoracicus Laidlaw was reported from Bihar, Chattisgarh, Gujarat, Odisha, Uttarakhand, Uttar Pradesh and West Bengal The present report of Lestes thoracicus Laidlaw, also adds an additional records from Madhya Pradesh and Maharashtra.

The campus tropical forest research institute, Jabalpur, Madhya Pradesh (Central India) is surrounded by agricultural fields with rural areas. The water reservoir
and the vegetation planted around the institute had make a very good habitat and source of attraction for many faunal species like insects, reptiles, birds and mammals.

Tiple et al., (2012) recorded total 48 species of odonata belonging from the 32 genera and nine different families, but zygoptera containing viz., Coenagrionidae, Protoneuridae, Platycnemididae, Lestidae, and Chlorocyphidae were recorded among this study, eight species of the previously unrecorded species were included in the check list of Madhya Pradesh. Overall 17 species of the damselfly were recorded from 6 families during this study viz. Coenagrionidae (13 species), Lestidae (2 species), Chlorocyphidae (1 species), Protoneuridae (2 species), Macromiidae (1 species) and Platycnemididae (1 species). Out of the total 48 species of the odonata 15 were very common (VR), 15 were common (C), 16 rare (R) and two very rare (VR) in occurrence.

Tiple et al., 2012 Most of the odonates are recorded which belong to the Family: Coenagrionidae (13 species) with recorded with one newly recorded species i.e. Agriocnemis femina. There were only two species were recorded from the Protoneuridae & Family: Lestidae. Family: Platycnemididae, Chlorocyphidae and Family: Macromiidae showed with one new record of Epophthalmia vittata recorded one species respectively from Madhya Pradesh. From the overall investigation of tropical research institute (TRF) observation indicates that good diversity of odonata the 70% of the reported species of Madhya Pradesh.

Family: Coenagrionidae showed Aciagrion pallidum, Agriocnemis pygmaea, Agriocnemis femina, Agriocnemis pieris, Ceriagrion coromandelianum, Enallagma parvum, Ischnura aurora, and Ischnura senegalensis, Pseudagrion decorum, Pseudagrion microcephalum, Pseudagrion rubriceps, Pseudagrion spencei, Rhodischnura nursei; Family: Protoneuridae comprises Disparoneura quadrimaculata and Prodasineura verticalis; Family: Platycnemididae Copera marginipes and Family: Lestidae showed Lestes umbrinus & Lestes elatus Family : Chlorocyphidae consist of Libellago lineata.

The TFRI campus area seems to have a rich odonate diversity of 48 species within a small area of 1.9 km distance, maybe due to its establishment of the bank of
the river Gaur along with the dense shrubs and tree vegetation, providing a major attraction to the damselfly species. The observations recorded in the present study may prove valuable as a reference for assessing the changes due to the environmental conditions in the locality, in future.

Kulkarni and Subramanian (2013) Total 609 specimens encountered during Pre Monsoon, Post monsoon and winter season in which they reported 46 species of odonates in 26 genera and eight families from Mula Mutha River, in which there are 23 species of damselflies which belonging from 13 genera and 5 families. According to Kulkarni and Subramanian (2013) the highest odonata diversity was observed in urban area followed by forest then agricultural fields. Kulkarni et al., 2002; Kulkarni and Prasad 2005 reported 24 species of odonata from Melghat Tiger Reserve Forest Amravati district, Maharashtra, India.

Kulkarni and Subramanian 2014 reported as documentation the Mula-Mutha River basin, and the major tributaries of the Bhima River which eventually drain into the Krishna Basin, for the purpose of the investigation the odonata diversity. A prolonged study showed on diversity and distribution pattern of odonates in such highly impacted and will help to understanding on ongoing ecological processes in sloping species community and identified factors driving local species loss.

The rich diversity and habitate specificity in India showed fabulopos opportunity to making some of the tools for assessing freshwater ecosystem health. An earlier studies which are conducted to Uttara district, Karnataka has shown there is clear cut realationship in between odonata diversity and riparian land use Subramanian (2008).

Subramanian (2009) reported there are about 463 species of Odonates from India. Madhya Pradesh state which harbors 76 species of Odonates (Tiple et al., 2012) and Kulkarni et al., (2012) recorded 101 species of Odonata from Maharashtra especially from Vidharbha region showed extensive survey. There are so many people's are working on the diversity and biosystematics of the Odonates especially damselflies, from the central India of Maharashtra.

The Prasad and Varshney in 1996 studied odonata from maharashtra state (46 species) including odonates fro Buldhana (7 species) and Wardha (9 species) District of vidarbha. Kulakarni et al., 2002; Kulkarni and prasad in 2005 th odonata fauna from the Melghat Tiger Reserve, Amaravati District and reported 24 species. Talmale and Kulkarni in 2003 worked to reporting paddy field showing habitat damselflies from the Bhandhara district, reported 19 species by Kulkarni & Mahabal in 2005 ; Kulkarni et. al., 2006 made documentation of the odonata group from Tadoba with 41 species of the odonata. Kulkarni & Talmale in 2008 studied odonata from Lonar wildlife sanctuary, Buldhana with 9 reported species.

Kulkarni & Talmale (2008) studied survey of Odonata from Lonar Wildlife Sanctuary, Buldhana and reported 9 species. Babu et al., in 2009 reported five new records of odonates from Maharashtra including one species, from Nagpur city. Das et al., (2012) reported 58 species of the odonates out of which there were 23 species of the zygoptera. In this survey family Coenagrionidae comprises there are 11 species followed by family Platycnemidae about 3 species followed by family Protoneuridae 2 species, family Lestidae 2 species and family Chlorocyphidae 3 species.

Overall survey is carried out from Similipal Tiger Reserve buffer area. Sixteen species of odonata from rice fields of Coimbatore sector were reported and identified by Gunathilagaraj et al., (1999). Species diversity is an important tool for the ecologist, Hamilton (2005). Palot & Soniya (2000) reported fourteen species of odonata from Courtallam region of Tamilnadu.

The order odonata is divided into the 3 suborder Viz. Anisoptera, Anisozygoptera and Zygoptera. In peninsular India only Zygoptera (Damselfly) and Anisoptera
Dragonfly are reported. About 6000 species of the odonates and subspecies belonging to 630 genera in 28 families are documented from worldwide.

The zoological survey of India also documented Order: odonata is ideal ancient insect order of the occurring on this planet from the 280 millions years ago. The taxonomy and diversity based distribution are documented over by Fraser 1933, 34, 36 and Prasad & Varshney, 1995. Babu et al., in 2009 reported five new records from Maharashtra Including one species newly reported.

Hussain (2006) reported a taxonomical survey of damselfly from Sindh river Pakistan, in which Norma-Rashid et al., (2001) a survey through freshwater swap Lake of Tasek Bera Malaysia in which they encountered fifty nine specimen of odonata in which belongs to 35 species had been reported. They wanted to make checklist and distribution of the odonates from Malaysia. Resh et al., 1995 stated as macro invertebrates (In related to the odonates) which showed their habitate in water are mostly used for the examining the habitate health, as they are the symbols of the lentic habitate.


Since Fraser documented family: lestidae bearing damselflies in (1933) vol. I. The Andrew & Tembhare in (1997) who reported 43 species from the local lotic water bodies of the Nagpur City; Kulkarni & Prasad In 2005; Melghat Tiger Reserve forest Amravati District; Talmale & Kulkarni in 2003 from Bhandara District; Kulkarni et al., in 2004 from Pench National Park, Nagpur city.

Kulkarni et al. in 2006 from Tadoba-Andhari Tiger Reserve, Chandrapur which is famous tiger reserve forest from the India; Kulkarni & Talmale in 2008; Lonar Wildlife Sanctuary, Buldana district; Tiple et al., (2008) who recorded a total of 62 species of
odonates with 18 new records from Nagpur City; Babu et al., in 2009 from Nagpur city and also a comprehensive account of Maharashtra fauna by Kulkarni et al., (2012).

Kulkarni et al., (2012) reported checklist of an odonata from Maharashtra state, in earlier time Prasad (1996) studied Odonata from Maharashtra state he reported 46 species of Odonata from this study. Later on he also made Consulates list of 83 species of the Odonata from Maharashtra State. After their Collection further report made by western regional Center, ZSI, Pune reported 18 species of the Odonata from was newly added. In overall list made total 101 species list. They reported list of all species.


Family: Platycnemididae consisting Genus: Copera showed 3 species of the damselflies Copera ciliata, Copera marginipes and Copera vittata. Family: Protoneuridae comprising subfamily Disparoneurinae Genus: Disparoneura one species Disparoneura quadrimaculata; Genus: Elattoneura showed only one Species Elattoneura nigerrima. Family: Lestidae, Subfamily: Lestinae and Super Family:
Lestoidea containing Genus: Lestes with three different species *Lestes elatus*, *Lestes umbrinus* and *Lestes viridulus*.

Superfamily: Calopterygoidea related Family: Calopterygidae and Sub Family: Calopteryginae genus: Neurobasis showed one species Neurobasis chinensis. Genus: Vestalis comprises two species *Vestalis apicalis* and *Vestalis gracilis*. Family: Chlorocyphadiade related Genus: Rhinocypha showed one species *Rhinocypha bisingnata* and Genus: Libellago showed two species Viz, *Libellago lineata indica* (Fraser) and *Libellago lineata lineata* (Burm).

Anbalagan *et al.*, (2013) reported odonata diversity from fields of Brinjal and Okra and rice fields was studied January 2005 to December 2008 from Tiruvallur district of Tamil Nadu. While doing three year survey they revealed 23 species of the dragonflies and 12 species of the damselflies (Zygoptera) were recorded and all these species were grouped into eight families.

In rice field showed 21 species richness and total 16 genera were less than vegetable fields during the entire study periods. In overall collection a migratory species showed most dominant in numbers throughout the year. Diversity indices clearly showed in the odonata diversity was higher in vegetables fields than a rice field’s maybe the region behind this habitat specificity.

Anbalagan *et al.*, (2013) reported Family: Coenagrionidae showed 7 species belongs from 3 genera; Family: Calopterygidae with only species with one genera; Family: Lestidae also showed 1 species and 1 genus respectively; Family: Euphaeidae also showed with only one species and one genera. The species richness, species variation, abundance, distribution, and species composition showed variation among vegetables and rice fields. Their are five new families are reported in overall collection such as, Family: Coenagrionidae, Euphaeidae, Lestidae and Platycnemididae were reported in case of the damselflies overall collection data made from the rice field and vegetables from Tamil Nadu.
In overall study of the Anbalagan et al., (2013) showed species richness 31 throughout. Total abundance was maximum 4167 in year 2008. Maximum eveness 0.8999 was recorded in vegetables areas in year 2007. This all are correlated with the Shannon-weiner Diversity Index of 3.328. Corbet (1999) reported as Damselflies are excellent ecological indicators.

Tsuda (1991) described 6000 species and subspecies of odonata have been under 630 genera in 28 families of odonata (dragonfly and damselfly) throughout the world. In Anbalagan et al., (2013) reported specimens were identified using identification keys by Fraser 1933; 1933; 1934 and Subramanian 2009. After Identification few of them are free and those unidentified specimen are brought to laboratory for identification.

They submitted their overall collection deposited to the Entomology Research Institute, Loyola College, of Chennai. They used atmospheric temperature, relative humidity, and Mean total average rainfall were regional meterological Cetre, Chennai. Diversity measurement done by Simpsons Index of diversity, Shannon Wiener Diversity Index (H), Shannon entropy, Species richness, Species Eveness were calculated by using PAST software and also applying Jaccard Simmilarity index was calculated to finding out diversity and distribution of the damselflies species In 2005 to 2008.

Damselflies are belongs for the order Odonata and suborder Zygoptera which was important group of the Insects In agro ecosystems, Forest ecosystems and Aquatic ecosystems. Mandel et al., 2008; Spencer et al., 1999 had potentiality reported as damselflies are act as a biocontrolling agents of agriculture, horticultural and forest pest etc. Many of the taxonomists reported as during larval stages odonates are important biocontrolling agent over mosquitoes eggs.

Knowledge on Odonata related to diversity in Different agro ecosystem is very much essential to get influence of the crop type on species richness, abundance, and evenness of damselflies, hence present work was undertaken to get underestimated damselflies diversity in two different agricultural fields including rice and vegetables fields in tiruvallur district of Tamil Nadu. For this investigation they made survey from
three different localities by quadrate methods where the vegetables crops Brinjal, Okra fields separately on a bed of 25m * 10 m. size laid bed with tied all crops. The damselflies are collected in between crops during 10:00 am to 3:00 pm. Sampling was done twice in a months.

Zia (2010) reported total collection and encountered species of damselflies from pakistan about 1061 total collection done, in that particular collection 51 species of the zygopterance were reported in 26 genera and 5 families. Their simmiler species also find this study which included Libellago lineata, Ceriogrion cormandelianum, Ischnura aurora, Ischnura senegalensis, Pseudagrion rubriceps, Pseudagrion microcephalum, Psudagrion decorum, etc.

Making comparative study on male and female also be done in overall biosystematicscs of the damselflies from the Zia's work showed that their were 33 species of the damselflies which showed shortening the size their mophometry may differe from the previous records. In sex ration it was found that females are most prominentey seen in overall work in the year 2004-2008.

Zia (2010) made biosystematics of Damselflies of Pakistan in which survey had been carried outh in the summer season in the year (2004-08). Zia reported species from Panjab - Attock, Thal, Bhawalkar, Pir Nara, tret, kahuta, Pinjar, Kattas, Faisalabad, Lahore, Multan, Sahiwal, Khora, Rawalpindi; North West frontier Province (N.W.F.P.)- Kohat, swat, Kohistan, Dir, Sirai, Mian Dum, Haripur, hangu, Qadir Nagar, Baharain, Kalam, Sin, Bannu; Sindh- Karachi, Hydrabad, Khas, Thatta, Dadu, Sanghar, Umer Kot, Sukker, Nawab shah, lurkana; Baluchistan- Hab, Bela, Ziarat, Zhob, Bolan, Pishin, Sibi, Mastung, Lasbella, Turbat, Pajgor, Kharan; Azad Jammu & Kashmir (AJ & K)- Murgur, Kotali, Poonch, Kundal, Muzaffarabad, Kundan, Bagh, Bhimber,Sudhnoti; Northen Areas (Gilgit and Baltistan) - Soni Kot, Gilglt, Goru, Chillas, Goor, Sundas, Husho, Ghanse, Husho etc. with sub-locaities including river, Lakes, forests, swapy areas, welands etc.

The Coenagrionidae is the family which contributes 9.7% of overall population of the odonates. Asaithambi and Manichavasagam (2002), reportedodonata of Annamalai
University, Tamilnadu, in which they reported 24 species of zygoptera belonging from four families and 21 genera.

Family Coenagrionidae shows largest abundance throughout the survey. The marsh dart i.e. Senegal bluetail, *Ischnura Senegalensis* (Rambur, 1842) is belonging from the family Coenagrionidae (Odonata: Zygoptera). Its natural distribution ranges from the 35 North from Africa to Japan (Askew 2004; Shama 2010). This species shows variety of habitat and is tolerant in variation and disturbance of the Pollution (Shama, 2010).

Andrew et al., (2008) as damselflies an interesting, diverse very primarily aquatic insects typified by that beautifully coloured and hovering insect commonly belonging from Suborder: Zygoptera (Odonata). They are instantly attracting their attention with their amazing flight skills and beautiful colouration. Damselflies are strong vicinity towards different fresh water habitat like Rivers, Lakes, streams, marshes, even though small pools and rice field also.

As Odonates are refered as good envioromental changes in the habitats, atmospheric temperature and the various weather conditions. Damselflies are biocontroll agents, many species of Odonates inhabiting in agroecosystem for their role to kill pest over the plant crops.

A checklist of Achanakmar – Amarkantak Biosphere reserve forest reported 7 families in which Coenagrionidae showed heighet species richness. Family: Coenagrionidae (15 species) consist of the *Aciagrion pallidum, Agriocnemis pieris, Agriocnemis femina, Agriocnemis pygmaea, Ceriogrion coromandelianum, Ceriogrion olivaceum, Ceriogrion rubiae, Enallagama parvum, Ischnura aurora, Ischnura senegalensis, Pseudagrion decorum, Pseudagrion microcephalum, Pseudagrion rubriceps, Pseudagrion spencei and Rhodischnura nersii.*

Family Protoneuridae consist as (3 species), such as *Disparoneura quadrimaculata, Prodasineura verticalis* and *Coconeura ramburi*; Family: Lestidae (3 species) such as *lestes elatus, Lestes umbrinus* and *lestes viridulus.* Family: Chlorocyphidae (2 species) such as *Libellago lineata* and *Rhinocypa bisignata* etc.
Family: Calopterygidae (2 species) *Neurobasis chinensis* and *Vestalis apicallis*; Family: Euphaeidae (1 species) i.e. *Dysphaea ethela*.

Our Nation India, which had its diversified bioclimatic regions which providing a great reproductive advantage to the damselflies species. As a example part of view the species richness across the Odonata found from India had diversified vice versa, In case of the foreign Nation Britain Reported 40 species of the odonata while In case of the Nagpur (Central India) only district comprises reporting 45 common species which was belonging from very small area of the country yet this type of the diversity occurring in overall India.

There are many scientist which had been survey carried out from various parts of the India. In which Prasad and Varshney in (1995) makes checklist of Indian odonates, in which they reported 499 species of odonates belonging from three suborder, 17 families and 139 genera. Wahizatul-Afzan A. *et al.*, (2006) reported 593 individual collection data of the odonates in which representing 44 species from 11 families were identified from Sekayu recreational forest, Terengganu in December 2005 in overall collection data of zygopterance showed 393 individual collection data was found to be more in number.

This type of collection showed zygopterance diversity in high amount. Family: Chlorocyphidae which showed maximum occurrence in the form of Rhinocypha genus. The ANOVA showed difference within the individuals belonging from the study sites are as all study areas consist of similar habitat.

In overall collection data of the Sekayu recreational forest, Terengganu comprises there are about 393 individual of the Zygopterans shows more abundance than Anisoptera (200 Individual). In his investigation on the diversity and distribution of the odonata shows family Libellulidae about 31.9% of the total individual.

*Rhinocypha limbata* were found to be most abundant species from in Terengganu. According to Vick in (2002) the order odonata is most popular insect group, in which there are about 6500 species were belonging from the 600 genera.
Sonawane (2013a) reported comparative studies on two rivers of Pune District such as, Pavana (Akurdi- 411044) and Bhima (Daund-413801) River both the localities were long in distance about 100km. In three month data analysis there are 59 species were encountered from which their three families reported during study; in which six genera with seven species had been reports from both localities.

Pavana River showed maximum species richness as compare to the Daund talukas site. As drainage of pune district showed that, Daund taluka showed very less annual rainfall rather other all study talukas. Mishra in 2007 revealed 70 species of the Odonates belonging to 40 genera and nine families of Madhya Pradesh in different localities. Further, odonates from Madhya Pradesh are documented from Pench National Park and Satpura National Park. Kanha National Park documented odonata fauna by Raju & Narayanan in 2008; Bandhavgarh Tiger Reserve forest by Mishra in 2009; Pachmarhi Biosphere Reserve forest by Prasad & Mishra in 2009; Singhori Wildlife Sanctuary by Talmale in 2011.

Sonawane (2014a) in present study based on comparative field studies on Bhima river (Rajgurunagar: Khed) and Meena River (Narayagoan: Junnar). In this study recorded eight species of the damselfly from both collection sites, in which 6 species are recorded from Bhima River while 4 species are reported from the Meena River. There are at about only two families are reported in overall survey investigation, family Coenagrionidae comprises maximum amount of the population instead of the family Platycnemididae. In this study Ceriagrion coromandelianum, Ischnura senegalensis, Pseudagrion rubriceps and Copera marginipes are found in both the localities.

Chowdhury and Mohiuddin (2011) collected 764 odonates specimens from Sylhet and Srimangal districts of Sylhet division and Chittagong, Khagrachari, Rangamati and Bandarban of Chittagong district. They work in periodically for nearly seven years from 1994 to 2000, in overall investigation 47 species of zygoptera belongs to 18 genera have been reported.
Many species of the odonata are restricted to specific habitats and acted as a stenotopic species (Orr, 2013). These are the species of the odonates which are highly sensitive factors such as amount of the sunlight movements. Generally the stenotopic species are reported from the family: Protoneuridae, Family: Platycemididae are very abundant in the primary forest.

Vick in 2002 make prominent observations that shady areas are mainly important habitat to the odonates species so the in the tropical rainforest providing optimum temperature shady vegetation. Structural of the forest and contaminant streams, rivers, and other water sources provide microhabitat for many Different species.

Sonawane (2014b) studied mating behavior of the Pseudagrion microcephalum (Rambur, 1842) of Annasaheb Awate College, Manchar, from Ambegaon tehsil, Pune. Territory displacement, Tandem position, Self insemination, wheel position based study was carried out. As Pseudagrion microcephalum is commonly called as blue dart because of its attractive colouration. With three black coloured three bandes on thorax and overall body blue cloured this species showed quiet similarity with the another damselfly which was commonly found in pond i.e Enallagma Parvum.

Sonawane in (2014c) reports the distribution of the Ceriagrion coromandelianum Fabricius, 1798. In which the genus Ceriagrion is particularly well developed in Africa with more than 40 species were exhibited. As Ceriagrion coromandelianum was reported as a common damselfly over Lakes, ponds and Rivers.

Fulan et al., (2010) reported abundance and diversity of odonates for four years after construction of a reservoir. They made survey to investigate the effect of drainage of the Guadiana River and its small tributaries after construction of the reservoir for Four year revealed 11 species of the Zygoptera. The Family: Coenagrionidae, Showed occurrence of Cercion linden, Coenagrion caerulescens, Coenagrion scitulum and Ischnura gracellis. Family: Lestidae belonging species Lestes viridis and Family: Platycnemidae showed two species Platycnemis acutipennis and Platycnemis latipes.
Corbet (1999) reported order odonata occupies almost all kinds of the habitats along the habitat permanent gradient ranging from permanent Lake, running waters and Lakes to small temporary rain pools. They also showed that some of the preferences to specific habitat and their distribution are very much distributed.

Sonawane in (2014d) took survey report on Pimpalgoan Joga Dam water reservoir from Junnar, Pune District, in which Collection was taken from Pre Monsoon, Post Monsoon and Winter Season. In this investigation a total 12 Species were reported which belong to 8 genera and 3 families. In which Coenagrionidae comprises 76% overall individual while Platycnemidae 16% and Protoneuridae 8%.

Sonawane and Saha (2014) reported diversity of *Lestes viridulus* Rambur 1842 from Junnar Ganeshkhind, Pune (Maharashtra: India). The order odonata (damselflies) consist of spread wing species which spend the major part of their life cycle in forest ecosystem such as forests small water bodies streams, pools, canals etc. the spread of wings are small and medium sized damselflies, as Lestidae family distributed all over the world in which there were 159 species reported, out of which eight are recorded in peninsular India.

Babu and Sharma in 2012 reported wheel position mechanism in case of the *Pseudagrion microcephalum*, in this study reports the female damselfly stores sperms from several males in her oviduct for fertilization. But every mating male removes previously stored sperms from oviduct with the help of especially by penis. In this mechanism male hold the female in the neck region at the same time female bend the abdomen to the second abdominal segment where genital organ is located; such condition is called as “wheel position”.

Umar *et al*., (2012) reported six odonata species were collected from taraba state Nigeria during night light trapping. Ngiam (2009) studied the distribution of the *Pseudagrion rubriceps*, *rubriceps* Selys, and 1876 from Singapore. Kandiben *et al*., (2005) while doing the aquatic arthropods study recorded 12 species of odonates in which only three species of damselflies had been reported such as, *Agriocnemis*
pygmea, Agriocnemis femina and Ischnura species from irrigated rice field of Madurai, Tamil Nadu.


Sivaperuman et al., (2011) reported new records of 4 species of dragonfly from Andaman and Nicobar Island. Silsby, (2001) observed that Odonata experiences two totally different life styles. In almost all cases, the egg and larval stages are aquatic where as the adults are terrestrial.

Husain (2012) reported taxonomical keys after which was occurred from Chatterpur district Bundelkhand, Madhya Pradesh India. The Main Objective of Husian and his co-author to make odonates conservation related to status & distribution. The species which are reported through overall investigation which are not included in IUCN red list included in the under of threatened taxa.

Mathew et al., (2004) reported two endemic species of the damselflies from the study areas, Orthetrum pruinesum neglectum (Ramb.). Husain et al., (2012) reported six new records of dragonfly with six new genera from Chhatarpur district Budelkhand, Madhya Pradesh, India viz. Orthetrum Pruinosum neglectum, Potamarcha congener, Patiala flavescens and Trithemis aurora.

Sharma et al., (2007) encountered 672 individual from those 21 Species of odonata belonging from 16 genera , four families and two suborder had been reported, among the 21 species of the odonates southern India including Marayoor, Bengalore, Javadis, Thangali, Mandagadde, and Chitteri, recorded 20,17,16,12, 11, and 8 species reported respectively.

Tiple and Chandra (2013) reported a checklist of 106 species of Odonata belonging from 53 genera and representing 12 families with 14 new species record from
Chhattisgarh (Madhya Pradesh), Central India. In which suborder Zygoptera: family Coenagrionidae (2 species) Protoneuridae (5 species), Lestidae (6 Species), Chloroclyphidae (3 species), Family -Platycnemidae & Macromiidae (1 species each).

In earlier study of the Mitra in 1988 he reported central India odonates faunal level study carried out later on in 1995 he also published a checklist on Indian odonates with larval level study and also harboring 39 species of odonates from Indravati Tiger Reserve, Madhya Pradesh.

Andrew (2013) reported diversity of Zilpi Lake which is a small water-body, formed by the construction of an earth in 1974 under the irrigation project of the Govt. of Maharashtra. The maximum live storage capacity this Lake is 1.51 mcm. It was located in 25 km west of Nagpur city and is today a well known spot for scenic beauty and aquatic birds. A total of 34 odonata species are revealed belonging to the family: Coenagrionidae (7 Sp.), Lestidae (1 Sp.), Aeshnidae (3 Sp.), Gomphidae (1 Sp.) and Libellulidae (22 Sp.) were found in this Lake.

Andrew and Tembhare (1997) recorded 43 species and sub-species of Odonata near the three major ponds (Ambazari, Telenkhedi and Gorewada) of Nagpur city. In the ten years Andrew and his co-workers have documented the odonata fauna from various small and large water bodies in Nagpur city (Andrew et al., 2010-13, Tiple et al., 2008). Most of the water bodies in Nagpur are more than a century old with having a stable invertebrate fauna. Mishra, (2007) making study of odonata from Madhya Pradesh harbouring total 70 species, belonging to 34 genera and 9 families were reported from different localities.

Sonawane and Khandagle (2014) reported a field note on Year wise field studies have been undertaken along the south and west side of Ganesh Lake, Akurdi-44 (Pune District, MS: India). The main objective of the study is to measuring the population, diversity and abundance of damselflies (Zygoptera) throughout the 2013 year. A total of 9 species of zygoptera (Damselflies) have been reported; belonging from 5 genera and 3 different families such as - Coenagrionidae, Platycnemidae and Protoneuridae.
Four species were found abundantly, two frequently and three species of damselflies were rarely observed at this site. *Ceriagrion coromandelianum*, *Ischnura senegalensis*, *Rhodischnura nersei*, *Agriocnemis pygmea*, *Ischnura aurora*, *Pseudagrion decorum*, *Pseudagrion microcephalum*, *Agriocnemis femina* and *Pseudagrion rubriceps* also used temporary water bodies around the Lake for the breeding purposes. Family-Coenagrionidae: *Ceriagrion coromandelianum* laid their eggs in aquatic vegetation and surrounding submerged vegetation.

Sethy and Siddiqi (2007) while doing the five exploratory faunal surveys from January 2003- April 2004 in three seasons (winters, summer and South west Monsoon), record 16 species of odonates from Similipal biosphere area belonging from 14 genera and six families, from these odonates family Coenagrionidae (2 species), Lestidae (2 species), Protoneuridae (2 species) i.e. about 6 species of the damselfly reported. Shende and Patil (2013) reported 34 species of damselflies belonging to 24 genera and 4 different families from Gorewada International Bio-Park, Nagpur, and Central India.

Palot and Soniya (2000) reported 16 species of odonates belonging from the two families, and 14 genera. Zygoptera (damselflies) are representing there are five species of Coenagrionidae family. All 16 species from the Keoladeo national park, Bharathpur are the new records. Mitra (2002) recorded some damselfly first time from Rajasthan viz. *Ceriagrion coromandelianum*, *Pseudagrion decorum* and *Ischnura delicata*.

Subramanian *et al.*, (2008) during investigation of riparian land use on diversity and distribution from 113 localities including stream, rivers and Lake of 4 District, 55 species had been reported from 12 Families. Borah *et al.*, in 2012, reported that many fragmentary works had been carried out from to know that diversity and the distribution of the damselflies from northern eastern parts, 7 species were recorded from Gauhati university campus, Assam.

Singh *et al.*, (2010) reported 23 species of odonates in which damselflies had 8 species belonging from 7 genera and 3 families of, Kane wildlife Sanctuary, Arunachal Pradesh, Northeastern India. Dow *et al.*, (2010) reported 50 species from 9 families out of 218 individual odonates collection, from Sungai Bebar, Pahang, Malaysia. There were 22 species of
damsel fly recorded during survey with 5 families viz, Chlorocyphidae (1 species); Coenagrionidae (14 Species); Protoneuridae (4 species); Platycnemidae (2 species) and Megapodagrionidae (1 species).

Sahoo et al., (2013) study carried out at the Kanha tiger reserve areas of central India located from the eastern base of the triangular Satpura hilly ranges. They reported 19 species of the damselfly belonging 9 genera from, Family Calopterygidae (4 species); Coenagrionidae (9 Species); Protoneuridae (2 species) and Lestidae (4 species). Tiple and Andrew (2010) studied oviposition behavior of *Rhodischnura nursei* which one of the most elusive, docile and endemic damselfly of India.

The *Rhodischnura nursei* exhibit non-guarding, endophytic oviposition behaviour during afternoon time this species laid their eggs. The Ambazari pond is perennial fresh water body. Its edges are covered by the weedy members of dicot. In many species of the males guard their females during egg laying, their by educing look like hood than other males (Corbet, 1999).

Stanton and Allcock (2011) studied habitat characteristics of *Mortonagrion hirosei* especially which are occurring coastal areas of Eastern Asia from Japan to Korea. Arulprakash and Gunathilagaraj, (2010) reveled 21 species of odonata from 13 temporary water bodies in which 14 species are of Anisoptera and 7 species are of Zygoptera belonging from seventeen genera of four families from Coimbatore and Salem districts in Tamil Nadu. Uniyal et al., (2000) reported 14 species of odonata from great Himalayan National Park, Himachal Pradesh.

In the 19 months survey during 2007-2008, Ragnekar et al., (2010) reported 66 species of odonates from Goa in which 34 are newly recorded with family Coenagrionidae (14 species). Rathod et al., (2012) recorded 31 species of odonata from Amaravati (Maharashtra) city belonging from three families and 9 genera of zygoptera out of which the family Coenagrionidae (9 species) and Platycnemidae and Lestidae (1 species each).

Ragnekar et al., (2010) carried out the surveys for Odonates from State of Goa about 19 months during year 2007-2008. They reported total of 66 species of Odonates with 34 new recorded species from the Goa State. In earlier time Prasad & Varshney in 1995 reported total of 499 species and subspecies of Odonata are known to occur in
Out of that about 200 species are recorded from peninsular India Subramanian et al., (2009), however from Goa city highlighting the fact that the 39 species recorded for the state is an underestimate data over the Maharashtra state.

Distribution, Diversity and Abundance of Odonata from Goa was totally based upon extensive surveys from May 2007 to December 2008. The diversity of Odonates needs to address gaps information on Odonata diversity of Goa which has been highlighted in the Goa State Biodiversity Strategy Action Plan in short GSBSAP.

Rangnekar et al., (2010) reported that total 39 species of the odonates in the campus of Carmel College for women in Salcette Taluka whereas, 16 species was not reported earlier. Observations were done in three seasons: Monsoon (June to September); winter (October to January) and summer (February to May) in the year 2007-2008. Individual's photographic illustration was done in various angles.

Collected specimens were identified with the helps of Identification manual. Collection and preservation should be avoided to those specimens are identified visually are emmidately free. For difficult species, specimens were caught using sweeping nets and collected in paper envelops. Collected specimen were kept alive until and unless they excrete out their gut content before treating with Acetone. Larger species of Damselfly were kept for 11th to 12th hr for preservation and smaller species kept only for 7th to 8th hr. then acetone treated specimen open for drying into the sunlight so as to extra amount of the acetone should be evaparated.

Mentioned or Labelled out identification code over it after identification by various taxonomical keys and field guides (Fraser, 1933, 1934 & 1936; Subramanian, 2005). Binyo Penyilam is a wetland conserve area within the Sarawak, Malaysia, where Dow and Unggang, in 2010 reported 23 Species of the Zygoptera belonging from 14 genera and the 07 Families. Coenagrionidae shows highest species fauna among the other families. Clark (1996) stated the dragonflies are the indicator of Biotope Quality in the Kruger National Park, South Africa.

Bharamal et al., (2014) reported 23 species of belonging to the 13 genera and 4 different Families were recorded from natural habitate of Sindhudurga District. In which Families Coenagrionidae showed three species of the odonates. The recorded species are Ischnura aurora, Ischnura senegalensis, and Pseudagrion decorum.
Bharamal et al., (2014) took survey of Sindhudurga Districts, from four different localities such as, Amboli, Sawatwadi, Vengurla, Kudal in the 2009-2010 year, under the aim of to make diversity and distribution based study over damselflies and dragonflies. The Odonates collections were made two times in a year pre-monsoon and pre-summer seasons by using sweep net method. The collected specimens were identified with the help of Fraser (1933, 34 & 36) and Subarmanian, 2009.

Garcia and Dijekstra (2004) there are 164 specimens are encountered during survey from Ankarafantsika National park Madagascar, from those 33 species of odonata recorded. Tiple et al., (2012) Reported 70 species of odonates in Madhya Pradesh TFRI recorded 48 species of Odonates belonging from 38 genera. Subramanian et al., (2009) there are 463 species of odonata found in India The suborder Zygoptera (Damselfly) has 29 genera and 67 species, out of which 25 are endemic.

Subramanian (2000 & 2008) Odonata Fauna of Western Ghat had 176 species odonates, 140 genera under 19 families, and 68 of which endemic. Subramanian et al., (2011) recorded around 174 species from western Ghat of India which comprising around 56 endemic species. The prey of the damselflies adults consists mostly of the harmful insects of crops, orchard sand forests and thus has a regulatory impact on the agro forestry ecosystem.

To explore the diversity and abundance of dragonfly and damselfly from Chatri Lake, Manwar et al., (2012) reported 22 species of odonata in which belonging to 4 families. As, biodiversity conservation is a national as well as international theme and as some of the Odonates are mosquitovorous activity; Sathe and Bhusnar (2010) revealed Biodiversity of mosquitovorous dragonflies (Order: Odonata) from Kolhapur has been studied.

Sathe and Shinde (2008) also demonstrated that the use of dragonflies in insect pest management instead of the mosquitoes control. In 2008 they observed the great relevance in designing mosquito biological control programmed by using Dragonflies. As Biodiversity protection and conservation is one of the national and international agenda and responsible for sustainable development of a region or a countries.
Corbet (1999) reported as augmentative release of biocontrol agents is practices routinely carried out in several countries for the suppression of mosquitoes populations. From Western Ghat 138 species have been reported, but most of the studies are made on the Western Ghats of Kerala state and very little attention is paid northern western Ghats of the Maharashtra except the work of Sathe and Shinde (2008).

Kulkarni et al., (2012) reported 101 Odonata species from Maharashtra; still very few studies had done on Odonata fauna of Western Ghats from Maharashtra (Sathe and Bhusnar in 2010; Aland et al., in 2012; Kulkarni and Subramanian in 2013; Sonawane 2012; 2013a and 2014). May in 2002 reported a work on the taxonomical analysis and Phylogeny of the genus Enallagma (Damselfly) in this study also got *Enallagma parvum*.

Subramanian 2005; Cordoba- Aguilar 2008 and Subramanian et al, 2008, stated that damselfly is reported as freshwater indicator taxa in biodiversity. Koparde et al., (2014) carried out the survey on odonates from Western Ghats (Maharashtra region) from 10 different localities, in overall survey they reported 64 species of odonates which belongs from 40 genera and 12 families, with five new records from Maharashtra state.

Myers et al., 2000 Stated that Western Ghats and Sri Lanka is global biodiversity hotspots where no of odonates species are reported by many taxonomists. Odonata fauna of Karnataka and Goa is relatively well diverse (Prasad 1995; Subramanian 2007; Kulkarni and Talmale 2008; Subramanian et al., 2008; Yadav et al., 2008; Rangnekar et al., 2010; Subramanian et al., 2013 and Rangnekar & Naik 2014) as compared to the Maharashtra and Gujarat; yet the region still lacks considerable data on spatial distribution and diversity of odonates in Maharashtra.

Grimaldi and Engel (2005) reported as, the biogeography of order Odonata is a rich fauna of study work that needs to make further attention regarding species level identification and with related to their various distributions. They also made some statement regarding future work should explore the biogeography of Damselflies (Zygopterans) groups from Maharashtra, and expand understanding of species rich groups like the damselflies have been symbols as model indicators for climate change,
due in part to their great dispersal capabilities, and earlier emergence has been documented in our warming climate.

They making ranges expansion of tropical taxa of odonata which is highly predicted into higher latitudes by distribution point of view. However some Odonata was showed their range of occurrence to fluctuate with environmental changes, northward range expansions have been reported over the last 40 years among several European taxa. The future biogeographical distribution of order Odonata group is undoubtedly will be influenced directly and indirectly by anthropogenically altered. Global Advances in Biogeography based work had been displayed by more than 30 scientific authorities on biogeography from around the world.

The book focuses on spatial and temporal variation of biological assemblages in relation to landscape complexity and environmental change. Grimaldi and Engel 2005; Thomas et al., 2011 reported as Dragonflies (Anisoptera), Damselflies (Zygoptera) and Anisozygoptera comprise the three suborders of Odonata are referred as odonates.

The Odonata are valuable models for studies in ecology, behavior, evolutionary biology and biogeography with mayflies (Ephemeroptera), make up the Paleoptera, the basal-most group of winged insects. Furthermore, few other insect groups possess as strong a fossil record as the Odonata and its precursors. Their different behavior, striking colours and relatively small number of the species made biogeography related to the particular environment.

Odonates are important predators during both their larval and adult stages. They are the top predators in freshwater ecosystems, such as rivers, ponds, ditches and Lakes. One of their most remarkable traits related to reproductive behavior, which takes place in a tandem position with the male and female by making “copulatory wheel”.

According to Fraser (1933, 1934, 1936); Subramanian (2005); Rangnekar et al., (2010) and Rangnekar & Naik (2014); reported that endemic species from northeastern western Ghat from Goa region. Annonymous, 2008 reported study in Japan and china adult damselflies are used for the pharmacology references. In Japan odonates are
showed a symbol of the strength in Japanese gladiators. In ancient time Japanese are used damselflies based medicine on fever, sore throat, and eyes infection even though Japan also called as Island of the dragonfly.

Sonawane (2014e) reported extensive survey in monsoon season from Annasaheb Awate, College, and Manchar while survey 118 specimen of damselfly are collected, which belongs from the 5 different families with 10 genera and 15 species had been reported. While for doing this project forest pool, Lake, steamy areas were selected.

Fraser (1933-34) making publication three volumes of the “Fauna of british India” in which about 536 species and subspecies of Odonata from India with many species from the Madhya Pradesh (MP) had been discovered and reported as a taxonomical point of view. The taxonomy of the adults is well documented and almost all description is available for almost all the reported species.

Tiple et al., 2012 the damselflies are amphibiotic insects, which belong to order Odonata. Dragonflies and suborder Odonata are mostly found around the vicinity towards fresh water habitats which prominently include rivers, streams, marshes, Lakes and even small pools and rice fields. The adults are predacious insects, while the larvae showed carnivorous and voracious feeders. They are also good indicators of environmental changes as they are sensitive to changes in the habitats, atmospheric temperature and the weather conditions. They acted as Bio-control agents, many species of odonates inhabiting in agro ecosystems play a crucial role controlling over pest populations (Tiple et al., 2008).

Sonawane (2014f) carry out the survey by taking objective the diversity, Distribution and abundance from the Dhimbhe Lake on zygopterans located in the western Ghat near Bhimashanker area from Ambegaon Tehsil, where there 15 species had been reported during among 11 genera and 5 families. In current study family Coenagrionidae comprises about 70 % distribution, followed by family Protoneuridae 9%, followed by the family Platycnemidae 8%, followed by the family Chlorocycophidae 7 % and Family Lestidae is only 1% in Distribution.
Study revealed the presence of 15 species of damselfly in four Different localities of Annasaheb Awate College, Manchar (Pune) Campus including four Different unidentified species. The species identified and reported are Agriocnemispygmaea, Enallagma parvum, Agriocnemisfemina, Ceriagrion coromandelianum, Ischnura aurora, Ischnura senegalensis, Pseudagrion spencei, Rhodishnura nersei, Libellago lineata, Pseudagrion microcephalum, Copera marginipines, Disparoneura quadrimaculata, Pseudagrion decorum, Pseudagrion rubriceps and Lestes elatus.

Cerciogrion coromandelianum and Pseudagrion rubriceps are found to be common in distribution in the study area Enallagma Parvum, Lestes elatus and Pseudagrion spencei were found in very less in number. Family: Coenagrionidae has 7 genera and 11 species are found. Platycnemididae and Lestidae family which has only one genus which belonging 1 species each found.Protoneuridae and Chlorocyphidae family which have only one species are reported; as Lestes viridulus which shows different location and which having different morphological colouration it’s commonly called as spreadwings. Mostly the abundance of the family: Coenagrionidae which reported an important biological aspect for certain environmental aspect. Such as, pollution frees part of the forest.

Subramanian (2005) also be reported a collection, identified and described species from checklist of the dragonfly and damselfly fauna of the India also provided a checklist over all data from India. Sonawane (2014f) reported larval level study of damselflies from Annasaheb Awate College, Lake Manchar, and Main objective of the study was measuring diversity of the damselflies larval distribution. Sonawane (2014g) reported survey study on the hemiptera and odonates larval correlation between them and related diversity on the basis of seasonal collection, mostly in current studies there are family Coenagrionidae larvae was found

Kulkarni and Prasad (2002) stated out of 5000 species from the word, there were 500 species belonging to 139 genera of 17 families have been reported from India. Prasad and Kulkarni (2001) had reported 71 species of odonates from Nilgiri Biosphere reserve. Prasad and Kulkarni (2002) also reported additional 34 Species from Kerala.
Radhakrishnan & Emiliyamma (2003); Emiliyamma (2008); Emiliyamma et al., 2007; 2012 made certain amount of the documentation on odonates from Kerala. Emiliyamma in 2005 revealed 12 species of zygopterans from Kottayam, Kerala (India).

Sathe and Shinde (2006, 2007, and 2008) have worked on biodiversity of Odonata from India of western Ghat from Maharashtra side. Corbet (1999) resulted as damselflies are the augmentative release of biocontrolling agents and practiced routinely in several countries for the suppression of the mosquitoes. And also reported as damselflies are occupies all types of the habitate from permanent flowing waters and Lakes to a small temporary rain pools and ditches. Most of the times damselflies are occupy almost all kinds of habitat along the permanent running waters and Lakes

Sharma et al., (2009) Fauna level surveys leads to the establishment of the National Pusa Collection (NPC) in 1905 in bihar after sometime it shifted to the new delhi in 1936 one of the largest collections of its kind in the world. This collection houses comprising about 17,500 species are authentically identified. In that, 273 species of Zygoptera (damselflies) 125 species with 10 families, Anisozygoptera 1 species with 1 family and Anisoptera (dragonflies) 147 species with 5 families belongs to 16 families of order Odonata were studied during 2006-07.

The vast collection over damselflies (Odonates) species in one place, will provide the grand opportunity and help to professional not only odonatologists but also researchers in their studies and also for further studies they refer references. They are among thedominant invertebrate predators in ecosystem. Being predators both at larval and adult stages, they play asignificant role in the food chain of forest ecosystem. In addition, their value as indicators of the biotope is being increasingly recognized and gets enhaced.

Subramanian (2014) stated that the habitate specificity makes an ideal representative for monitoring health of freshwater ecosystems. The odonata fauna of the India was studied by various taxonomist and Naturalist such as, Selys-Longchamps, Laidlaw and Fraser had contributed over the Knowledge on Fauna of India Odonata. There are many scienctist of the ZSI are done morphometry analysis,
diversity and distribution of the Odonates Viz., Chhotani, Mitra T.R., Kulkarni., Radhakrishnan., Drs. Lahiri., Prasad Mahabir, Emiliyamma., Babu Rajappa, Sharma Gaurav., Nandi Supriya. Jaffer, Talmale S., Joseph and Kumar Arun made contributed work over Odonata fauna and made checklist across many state levels and conservation areas. The odonates checklist is made by Subramanian in 2009. After this new species are discovered from the India. Taxonomy is a global aspects on higher level relationships of the families had been made by molecular systematic.

Das et al., 2010 which reported there were 31 species within Baripada Forest Division. The author has been studying the odonata fauna of the Similipal landscape in Mayurbhanj district extensively from 2006, and had recorded 92 species, which includes several new records and range extensions for the state and peninsular India. There were some the taxonomic description is under progress for some species, which may be possibly a new record to the science.

Jarzembowski (1998) studied fossils based description of the zygoptera till genera and species level classification of some families such as Coenagrionidae and Protoneuridae based on fossil records from Brazil and England with phylogenetic significance. Azpilicueta Amorin (2007) making the analysis of distribution data of odonata throughout in the New Spain indicates there were 49 species of odonata, this survey is carried down.

Beatty et al., (2007) reported that as compared to other regions in the world, the islands over the Ocean scattered in the southwest sided Pacific Ocean is remain largely unstudied with respect to damselfly taxonomy, identification, abundance, distribution, diversity. the author make 2 month survey from the ocean Iceland in summer season of the 2005 in which he had recorded about 24 species of zygoptera, in which two species are unidentified.

Papazian et al., (2007) reported study a collection of adult specimens of the odonates which are collected during a hydro-biological mission conducted in 2005 from the French Pacific Island Territories of Wallis and futuna is studied. In this investigation 8 Anisoptera and 2 zygoptera are recorded. Watanabe et al., (2004) Odonates occurs in
almost microhabitat and responsible for the aquatic vegetation and particularly diversity and distribution are recorded on microhabitat.

Adarsh et al., (2014) reported as damselflies are indicators of the environmental conditions prominently including the water environment and forest structure; they belong to the order Odonata and suborder zygoptera. In the temperate zone of the world, damselflies are most frequently used as indicators of environmental health. Mitra (1995), Srivastava & Suri Babu (1997), Suri Babu & Srivastava (2001), Prasad & Mishra (2008), Mishra (2007), and Tiple et al., 2008; 2012 had been working on the odonata fauna of Madhya Pradesh (Central India).

But during this past survey there is no record of odonates from Budelkhand (District: Chhatarpur) available apart from previous fauna. Prasad and Singh in (1994); Prasad and Varshney (1995) published a checklist of the Indian odonates, including updated data on larval studies of identified species.

Dholu et al., (2014) reported total nine species of the damselflies during preliminary inventory of odonata from Ajwa Sarowar, Tiimbhi tank, Mahi River etc in year 2012-13. *Lestes thoracicus* is one of the damselfly belonging from Family: Lestidae only reported from Ajwa Sarowar. Rohamare et al., (2014) revealed total twelve species of damselfly from six different district of Gujarat such as, Kheda (7 species), Anand (10 species), Vadodara (14), Ahmadabad (5 species), Panchamahal (4 species) and Dahod (8 species). Overall investigation *Pseudagrion microcephalum* is first time recorded from the Gujarat.

Tiple (2014) reported odonates species diversity of the Bor wild life sanctuary, Wardha, Maharashtra, Central India from 2011- 14 during overall intensive survey a total family : Coenagrionidae (15 species), family: Lestidae (3 species), family: Platycnemidae & Protoneuridae (2 species each) i.e. 22 species of damselflies are revealed. Talmale (2014) reporting a preliminary list of odonates in which 13 species of damselfly revealed in which Family: Coenagrionidae (9 species), Platycnemidae (2 species), Lestidae (1 species) and Chorocyphidae (1 species).
Sharma (2014) revealed 48 species while doing extensive survey in Thar Desert in 2008-2014, which belongs from 7 families and 2 suborder of order odonata with 13 newly recorded species from Rajasthan such as, *Pseudagrion microcephalum* (Rambur, 1842), *Disparoneura quadrimaculata* (Rambur, 1842), *Neurobasis chinensis* (Linnaeus, 1758) and *Ceriogriion coromandelianum* (Fabricius, 1798).

Mandawar *et al.*, (2014) studied Arrenurus mite infestation on the damselfly species from larval to adult stages at Ambazari Lake and the mite is found in three different colouration black, dark green and orange colour. Manwar *et al.*, (2014) reported 15 species of damselflies from Pohara Malkhed Reserve forest, Maharashtra in which family: Coenagrionidae (13) and Platycnemididae (2 species).

Sonawane *et al.*, (2014) making collection of the damselfly from Pune district from four different four talukas such as, Daund, Indapur, Haveli and Baramati from two different habitat lentic and lotic water ecosystem and riverine surrounding in overall investigation in year (2012- 13), 881 specimen are encountered to study the diversity, abundance and variation, In overall finding 18 species have been reported belonging from 12 genera and 5 different families.

Rolff *et al.*, (2000) studied correlation of the ectoparasitism of mites on mating of damselfly, basically mites are attached in thorax region in colony; and feed on fat of the particularly of the species so ultimately resulted into the light weight so no issue during mating success. During anthropogenic invention the riparian areas in related to the depletion of the fresh water biodiversity if the particular insect, so that there is essentialities conservation and catchment over fresh water insects from Western Ghats.

The main objective behind this of author was detailed documentation and biodiversity in related to the temporal scales and making suitable indicator for long term monitoring of lentic and lotic ecosystem health. For that purposefully the macro invertebrates such as certain Anisopterans and Zygopterance, Coleopterans and Molluscans are indentified and manipulated the data to conserve fresh water ecosystem from South Africa and United Kingdom (UK). These data analysis had shown the reliable indicator of the freshwater ecosystem health Samways (1992).
Subramanian et al., (2011) The most incredible Western Ghats - hotspot of the India, posses 29 genera and 67 species of the damselflies (Zygopterance) belonging from 18 families. Varghese et al., (2014) reveled total 31 species belong from 39 genera and 4 different families of Zygoptera; in which family - Coenagrionidae (5 genera with 9 species), Family- Platycnemidae (4 genera with 7 species), Family- Chlorocyphidae (2 genera with 3 species), Family-Euphaeidae (2 genera with 2 species ), Family-Macromiidae & family- Lestidae represented (1 genera with 1 species respectively). Raju (2007) reported Agriocnemiskeralensis Peter, 1881 from Thiruvanathapuram, Kuttanad and Kottayam. Raju and Narayanan in (2008) reported distribution from Madhya Pradesh and Chhattisgarh of some Zygopterance, Agriocnemis lacteola Sely, 1887; Ceriogrigon rubiae Laidlaw, 1994; Prodasineura verticalis (Selys, 1860); Lestes elatus Hagen in Selys, 1853; Dysphaea ethela Faser,1924.

Wikelski et al., (2006) writing a valuable not on different aspect of migration of the dragonflies during autumn season to study 12 days activity. As in every year’s lots of butterflies and odonates, birds also migrated from one place to another place to achieved proper adaptation for survival. They make some radio transistors and attached to the ventral side of the thorax. Mitra (2006) worked on odonata fauna.

Zia et al., (2008) reported a survey based analysis for diversity of the valley of the Azad Jammu and Kashmir, while doing this survey they also reported 30 species of the damselflies. Zia et al., (2009) also reported study survey of northern areas of Pakistan. His study includes 37 species of Odonata in which there were only 9 species of the damselflies revealed with one new record.

Mathew et al., (2003) reported 322 species of the insects from Shendurry wildlife Santuary in two month survey. This survey revealed 202 species of the butterflies including 25 species of bugs, and 12 species of the bees and wasps with 6 species of the Odonata.

The uniqueness of damselflies in order odonata and very interesting its mating style, during mating time sperms are produced in the posterior part of the abdomen but according to the mating time these sperms are travel to accessory organ, presently they
are moves to ventrally placed accessory organ on the abdominal segment 2\textsuperscript{nd}. The male grasps to the thorax region so as to make wheel position and inserting specialized claspers. Both partners i.e. Male & female are equally contributed and bending their abdomen in the love shaped so as to genitalia of the female are fixed with male accessory organ.

The eggs are surrounding of some protective jelly like substance which make swells and also adhesive when come in contact with water current. Due to Parental care of eggs get protected while in flowing water current also. Most peculiar thing of the damselfly is flying skills. They have 180° angle movements of flying and moving reversibly also (Subramanian, 2005).

Sonawane (2014f) reported the endemic species *Rhodishnura nersei* (Mortan, 1907) reported during this surveys study only one throughout. It shows variety of colouration on the abdomen which is the unique remark of the specimen. This species generally hide in between the grass to avoid enemy attack due to bright colouration which make them protected.

The order Odonata is ideal taxon, in present interpretation have been seen that distribution of different species at 4 different localities in Annasaheb Awate college, Manchar some species are found in Lake region and some are found station no.1, in large amount and another station no, 2 and 3 in small amount some in short this variation can be seen due to the presence of grasses, submerged vegetation, large forest, shaded areas, flowing water, wetlands shrubs, large trees, large grass land, garden.

In Lake Region there are 8 species of damselflies which are found, in site no. 1 (slight stagnant water) get 4 species, in site no. 2. (Flowing water) found 2 species. And site no. 3 (Forest area) found 1 species. Certain species like *Ischnura senegalensis* and *Ceriogrion coromandelianum* are more dominating species in all campus area.

Sonawane (2013b) made survey on damselfly from Dhinbhe lake (Maharashtra, 421601) region. During these survey total 80 specimens of the damselfly collected. The
main objective of this study was to find out diversity and distribution total 7 species of the damselflies with three different families were reported. In which Lestes elatus were first time reported from this area where any thsir occurrence was rare. This study carried out from June 2013 to October 2013, Amoung Lake, rivers, streams and forest areas.

Sonawane (2013c) reported total 271 collected specimens of the damselfly to find out seasonal variation and abundance of the damselfly from Gupteshwar Lake (Daund Taluka). In this study total 11 species of damselfly belonging to the 8 genera with 4 different families was reported, in which Family Coenagrionidae comprises total 73% diversity of the species with total abundance. In family coeanginidae family total 9 species reported such as, Agriocnemispygmea, Agriocnius femina, Ceriogrion coromandelianum, Enallagma parvum, Ischnura aurora, Ischnura senegalensis, Pseudagrion rubriceps and Pseudagrion decorum etc.

The survey report which was carried out in three different seasons such as, rainy, winter and summer time, it was showed that Pseudagrion decorum (Rambur, 1842) with 79 individauls collection, followed by Ischnura senegalensis Rambur, 1842) with 51 individual collection followed by Ceriogrion coromandelianum heighest species occurrence records with 41 individual’s collection.

This survey again had second reporting family i.e. Family: Protoneuridae showed ony one genus and one species Copera marginipes with 25 individuals collected specimens. Followed by Family: Chlorocyphidae (2 individual) collected specimens of Libellago lineata (Burmeister, 1839). Specimens one was in October and second was in May month. Family wise distribution showed that family: Coenagrionidae (73%) with 5 genera and 8 species. Family: Protoneuridae (9%), Platycnemididae (9%) and Chlorocyphadae (9%) with1 genera and 1 species distribution.

Subramainan (2011) reported overview of regional fauna across rivers, streams and related wetlands from Western Ghats with high diversity and endemism of Odonates. The fauna of Western Ghats consist of 174 species with 69 endemics species of Odonates distributed all over the India. In the recent study which had been
occurs from the field survey give more and more information regarding geographical distribution and habitat needs of many of the Odonates in this particular region (Emiliyamma et al., 2003; 2005 and Subramanian 2005; 2007). This study indicates that the hills streams and rivers of Kodagu, Wyanand, and Nilgiris have diversity with endemic species also. In IUCN reported 174 species of the Odonates with including 56 endemic species have been assessed.

The fresh water habitat which includes forest streams, ponds, canals, ponds, Lakes, reservoirs, paddy fields, fisheries and aquaculture pond also be used and well etc.

**Endemism in Western Ghats**

The suborder Zygoptera (damselflies) represented by eight families from Western Ghats, in which Zygoptera consist 29 genera and 67 species of which 35 are endemic. Suborder- Zygoptera, families Coenagrionidae (25 species) are the most reachable species of the Western Ghats wheras their others families which showed endemism in which especially family Platystictidae, Protonuridae, Lestidae, Chlorocyphidae etc. Instead of that the family Platystictidae has no endemic species from Western Ghats.

Familywise endemism and diversity showed that family Protonuridae consist of 15 Different species out of which 12 species are endemic, In case of family: Platystictidae showed 8 species of the Different species of the damselflies in which all species belonging from the this family are endemic. While in case of the family: Coenagrionidae showed 25 Different species of the damselflies in which 4 species are endemic, Family: Lestidae consist of eight species of damselflies in which 3 species are endemic, Family: Chlorocyphidae with 3 Different species with 1 endemic species.

Family: Platycenemididae with two species of damselflies with no endemism occurs and last Family Calopterygidae which also showed like Family: Chlorocyphidae 3 different species and none percent endemism.
Subramanian in 2007 reported as the Odonates which are reported in the endemic condition of Western Ghats are mostly found from the Riverine habitats such as, mountains streams and rivers. A large proportion of the endemics species are showed their survival from the riverine habitat. The non endemics on the other hands and have wider habitat preferences than endemics including from man made and lentic and lotic ecosystem.

In IUCN reported remarkable entry regarding conservation related the conservation status (IUCN Red List Category). The 171 species of the Odonates are having risk of the extinction. The IUCN worke on the basis of seven different categories such as, Extint, Extinct in the wild, Critically Endangered, Endagered, Vulnerable, Near Treatened, Least Concern and Data deficient etc.

Out of all 171 Odonates species of the Odonates Exant species are showed their percentage as sufficient amount, in case of the four species 3.2% are assessed as Vulnerable, 4.8% threatened species and 92% least concern. An Addition of the 46 species, a quarter of the species is classified on the dat deficient (DD) which related to the risk of extinction.

Data deficient species of the damselflies family

There are 46 species of the Odonates belonging from the Data deficient areas, in which there are 25 species are reported as endemic species. Damselflies belonging families are Family: Protoneuridae with eight species that contribuite 53% in overall odonata families.

Species richness related to the damselfly (Zygoptera)

Species richness is particularly simple as the individual count in overall collection from particular areas. In case of the Western Ghats is not evenly distributed over. The heighest level of richness and it varies from 112-128 species.

Endemic Species
Endemic species of the Odonates are strongly reported to the endemic Odonates of the Western Ghats are almost totally confined along the hotspots. Each every hotspots of the basin showed species richness moderately good and its percentage are as 31-41% species. In southern karnataka part of riverine ecosystem of the Kavery River, Coastal Rivers of kerala and Bhavani and Moyar from north western Tamilnadu showed endemic species.

**Treated species**

The occurrence of the threatened species especially found from forested hill streams, or high altitude of grassland (Subramanian, 2013).

**Urbanization**

Urban and industrial developments across the Western Ghats made due to the collapsing of habitats such as water bodies, conversion of ponds, tanks, and pools for agricultural purposes, semirural and urban expansion, industrial development, road construction, sand mining, riparian deforestation, soil erosion, and dumping of solid waste also threaten the habitats of Odonates (Subramanian, 2013).

Babu and Nandy (2010) recorded diversity based analysis over Odonates from Maharashtra, India. In which they make documentation over all revealed species on the distribution factor of the odonates fauna. They made updated species list over odonates from Maharashtra depending upon their occurrence and distribution. The overall revealed species of the odonates showed 97 species and subspecies belonging from the 54 genera with 11 different families.

Babu and Nandy (2010) reported Maharashtra is the 3rd largest state of India, in relation to the population and area also. It is located in northern Western Ghats of Peninsular India. Earlier record over odonata are discovered in Maharashtra by state of Laidlaw in 1917, 1919 and 1920 latter on by Fraser in 1920, 1921, 1924, 1933, 1934 and 1936 and latter on by Basin in 1953; Mitra in 1988; Prasad in 1996.
Recently over a decade, several species of the odonates are reported by many taxonomists such as, Kulkarni et al., 2002, 2004 and 2006 and Babu et al., 2008 and Babu and Mandal (2009) from Maharashtra. Finally Prasad made a List over Odonata from the Maharashtra State which provided 97 species and subspecies belonging to the 54 genera and 11 different families. Further diversity and distribution is totally based on fragmentary work still from very small area/localities got finding of the new records.

Babu and Nandy (2010) made diversity based list of species belonging from species and their distributions within the state and also showed diversity in the state of the India and other countries. *Aciagrion Pallidum* which belonging from the Family: Coenagrionidae showed their distribution from Nagpur and Satara (Maharashtra), Eastern Himalaya, western Himalaya, Assam, Bihar, Orissa, Uttar Pradesh, Utterkhand and Western Ghats and out of country from Myanmar, Nepal, Thailand, Vietnam, Kampuchea etc.

*Agriocnemisfemina* distributed In Case of Maharashtra from Sangali, Satara and Pune (Prasad, 1996), In India from Assam, Great Nicobar, Manipur and West Bengal; in case of World it was reported from Australia, Bangladesh, China, Cuba, Java, Micronesia, Myanmar, New Guinea, Philippines, Singapore, Thailand and Vietnam.

*Agriocnemis keralensis* Peters, 1981 species reported from Goa from Porovorim by Rangnekar et al., 2010 and from Kerala: Thiruvananthapuram (Peters, 1981), Kottayam by Emiliyamma et al., 2007. *Ceriagrion coeruleum* Laidlaw, 1919 showed their geographical distribution of Darjiling & Pashok from West Bengal. In 1933 Fraser made renamed this species as Ceriagrion azureum (Selys).

*Agriocnemis pieris* Laidlaw, 1919 is distributed from Siang of Simi Bridge and Jining by Ram and Prasad, in 1999 of Arunachal Pradesh & Mitra in 2006; District Chhattisgarh from Bastar by Prasad, 1996. Indravati Tiger Reserve by Mitra in 1995; Aravalem waterfalls from Goa, Durbata by Prasad in 1995, Savri waterfalls, Mayem, Derode by Rangnekar et al., in 2010; Karnataka North Kanara Castle Rock a Talewadi by Laidlaw in 1919, Coorg, South Kanara by Fraser, 1924; 1931 & 1933, Kudremukh National Park by Emiliyamma and Radhakrishnan, in 2007; from Kerala: Cochin,
Malabar, Wayanad by Fraser, 1924 & 1931, New Amarambalam Reserve Forests by Rao and Lahiri, in 1983, Alappuzha, Ernakulam, Kannur, Kasaragod, Kottayam, Kozhikode, Malappuram, Wayanad by Emiliyamma et al., in 2007; From Maharashtra State this species occurred from Bombay by Laidlaw in 1914, from Kolhapur by Babu and Nandy, 2010; from Mizoram of Aizwal by Prasad in 2007; from Tamil Nadu of Nilgiris by Fraser in 1931; from West Bengal part of Kolkata by Lahiri and Mitra, in 1976 and Mitra in 2002.

Agriocnemis splendidissima Laidlaw, 1919 reported from Andhra Pradesh state of Chittoor area by Prasad in 2007; Barpeta and Goalpara from Assam state by Mitra, in 1994 & 2002; Bastar from Chhattisgarh by Prasad in 1996; Paytale & Sada from Goa by Rangnekar et al., 2010; Valsad and Kolak from Gujarat by Prasad in 2004; Una & Rampur from Himachal Pradesh by Babu, in 2011; Hazaribagh from Jharkhand by Prasad and Varshney in 1988; North Kanara, Talewadi near Castle Rock by Laidlaw in 1919), Coorg, South Kanara by Fraser, in 1931, Kudremukh National Park by Emiliyamma and Radhakrishnan, in 2007; Cochin & Chalakudi from Kerala by laidlaw, in 1919, Malabar, Wayanad by Fraser, in 1931 & 1933, Silent Valley and New Amarambalam Reserve Forests by Rao and Lahiri, in 1983, Kozhikode, Wayanad by Emiliyamma et al., 2007; Sagar from Madhya Pradesh by Srivastava and Suri Babu, in 1997;From Maharashtra this species reported from Pune, Khandala by Fraser, in 1933, Thane from Kalyan by Prasad, in 1996, Mumbai & Pune by Babu and Nandy, in 2010; Ganjam from Orissa by Mitra, in 1994 & 2002; Tripura: Teliamura from Tripura by Srivastava and Sinha, in 2000: Mitra, in 2002; Nilgiris from Tamil Nadu by Fraser, in 1933; Hooghly & Howrah from West Bengal by Ram et al., in 1982, and Jalpaiguri, Koch from Bihar state by Srivastava and Sinha, in 1993.

Agriocnemis pygmaea distributed according to the Babu and Nandy (2010) from Maharashtra from Ahmednagar, Aurangabad, buldhana, Chandrapur, Jalgaon, Kolhapur, Mumabai, Nashik, Pune, Satara, Sindhudurg, Solapur, Thane, Raigad (Prasad, 1996), Bhandara (Talmale & Kulkarni, 2003); Nagpur (Kulkarni et al., 2004) Rest of the Idia this species belonging from Arunachal Pradesh, Assam, Kerala, Manipur, Mizoram, Nagaland, Nicobar Iceland, Orissa, Rajasthan, Uttar Pradesh,
Sikkim, Southern India, Uttarakhand, and West Bengal etc. from worldwide they occurs from Afghanistan, Africa, Australia, Bangladesh, Bhano, China, Hong Kong, Indonesia, Japan, Malaysia, Nepal, Pakistan, Palon, Philippines, Singapore, Sri Lanka, Taiwan, and Thailand.

Ceriagrion rubiae Laidlaw, in 1916 distributed from Coorg, Kanara of Karnataka Fraser, 1924 and 1931; Coorg: Gonikopal, Somwarpet by Mitra and Babu, in 2010, Kudremukh National Park by Emiliyamma and Radhakrishnan, in 2007; Chalakkudi from Kerala (Laidlaw, 1916), Malabar Fraser, 1924 and 1931, Kannur, Kasaragod by Emiliyamma et al., in 2007; Khandala Maharashtra Fraser, 1924; Koraut from Orissa by Srivastava and Das, in 1987; and Tamil Nadu from Nilgiris by Fraser, 1924.

Ceriogrion malayanum distributed from Pune, Nagpur and Yavatmal rather than Maharashtra they also showed their Occurrence in Manipur, Rajasthan, and west Bengal. They also showed their distribution worldwide from the Bangladesh, Kampuchea, Malaysia, Myanmar, Pakistan, Singapore, Sri Lanka, Thailand and Vietnam etc. Pseudagrion andamanicum showed their distribution from Andaman & Nicobar Islands by Fraser, in 1924 & 1933), South Andaman by Chhotani et al., 1983, from Nicobar and Great Nicobar, Andaman (Ram et al., 2000).

Cerioagrion cerinorubellum showed their distribution from Maharashtra including from two locality of the Nagpur and Yavatmal, In case of the India level distribution it occurs from the Bihar, Goa, Andamans, Himachal Pradesh, Kerala, Karnataka, Madhya Pradesh, Orissa, Tripura and west Bengal. Rather than India it also found from the Bangladesh, Indonesia, Kampuchea, Malaysia, Pakistan, Singapore, Sri Lanka, Thailand and Vietnam etc.

Mortonagrion varrassi Fraser, 1920 one of the Damselflies reported from Northern Goa by Kulkarni and Talmale, in 2008 and Cotigao by Rangnekar et al., 2010); From Vayitri of Malabar Ghat by Fraser, in 1931, Kannur, Kozhikode, Malappuram, Wayanad and Thiruvananthapuram of Kerala by Emiliyamma et al., 2007) and from Maharashtra including Bombay fragmentary part such as, Virar and Pawai Lakes in Fraser, in 1920.
Ceriogrion coromandelianum showed their occurrence from the Nagpur, Nasik, Pune, Amaravati, Kolhapur, Raigad, Satara, Solapur, Bhandara (Talmale & Kulkarni, 2003), and Chandrapur (Kulkarni et al., 2006), rather than India this species also occurred from various states of the India such as, Arunachal Pradesh, Assam, bihar, Goa, Gujarat, Kerala, Manipur, Madhya Pradesh, Meghalaya, Mizoram, Orissa, South India, Tripura, Uttar Pradesh and west Bengal. This species also reported from various countries also Viz. Bangladesh, Kampuchea, Laos, Malaysia, Myanmar, Nepal, Thailand, Vietnam etc.

Pseudagrion indicum one of the endemic species distributed from Margao of Goa by Prasad, in 1995, Derode by Rangnekar et al., 2010; Karnataka: Coorg, Kanara by Fraser, 1924, Kudremukh National Park by Emiliyamma and Radhakrishnan, in 2007; Malabar from Kerala by Fraser, in 1931, Kannur, Kozhikode by Emiliyamma et al., in 2007; and from Nilgiri Hills & Nadgani from Tamil Nadu by Fraser, 1924.

Ceriogrion olivaceum also reported from Nagpur, Pune, and Chandrapur (Kulkarni et al., 2006) rather than India it also be reported from Arunachal Pradesh, Assam, Kerala, Manipur, Madhya Pradesh, Meghalaya, Mizoram, Orissa, South India, Uttar Pradesh and west Bengal. And also found from the Bangladesh, Kampuchea, Laos, Malaysia, Myanmar, Nepal, Thailand and Vietnam.

Enallagma parvum reported from Nagpur, Pune, Chandrapur, (Kulkarni et al., 2006) four different district of Maharashtra instead of Maharashtra this species also be reported from the Assam, Bihar, Manipur, Madhya Pradesh, Meghalaya, Orissa, Sikkim, South India, Uttar Pradesh and West Bengal. This species also showed their distribution from world from various countries such as, Myanmar, Nepal, Pakistan, Sri Lanka and Thailand.

Ischnura aurora reported from Ahmednagar, Aurangabad, Buldhan, Dhule, Jalgaon, Kolhapur, Nashik, Pune, Solapur, Bhandara (Talmale & Kulkarni, 2003) ; Nagpur (Kulkarni et al., 2004); Amravati (Kulkarni & Prasad, 2005); Chandrapur (Kulkarni et al., 2006); Mumbai (Kulkarni et al.,2006) of Maharashtra. Rather than Maharashtra Bihar, Kerala, Madhya Pradesh, Orissa, South India, Uttarakhand and
West Bengal are the various states of the India and Bangladesh, Myanmar, Nepal, Oman, Pakistan, Sri Lanka.

*Pseudagrion hypermelas* recorded from Wardha (Maharashtra); rest part of the Maharashtra this species also reported from the Bihar, Gujarat, Madhya Pradesh, Orissa, South India, Uttar Pradesh and West Bengal of India. Apart from India this species also showed their occurrence from Pakistan which is located at North West direction of the India.

*Pseudagrion rubriceps* showed their occurrence from Aurangabad, Nashik, Satara, Sindhudurg, Wardha, Pune (Prasad, 1996), Nagpur (Kulakarni et al., 2004), Amaravati (Kulkarni & Prasad, 2005), Chandrapur (Kulkarni et al., 2006), Maharashtra. This species also found from various states of the India such as, Assam, Bihar, Chandigarh, Kerala, Madhya Pradesh, Meghalaya, Orissa, Rajasthan, Tamil Nadu, Tripura, Uttar Pradesh, and Uttarakhand and West Bengal, this species also showed their occurrence from the Bangladesh, China, Hong Kong, Indonesia, Malaysia, Nepal, Pakistan, Philippines, Taiwan, and Thailand.

*Pseudagrion Microcephalum* also showed their distribution from Maharashtra from two districts viz., Amaravati (Kulkarni et al., 2005 and Kulkarni et al., 2002) and Wardha. This species also showed their occurrences form Assam, Goa, Kerala, Madhya Pradesh, Orissa, South India, Uttar Pradesh, and West Bengal from India. They also reported from various countries of the planet such as, Australia, Bangladesh, China, Indonesia, Japan, Malaysia, Myanmar, Nepal, and Papua new-Guinea, Philippines, Singapore, Solomon, Sri Lanka, Taiwan, Thailand and Vietnam.

*Pseudagrion Spencei* showed their occurrence from Chandrapur (Kulkarni et al., 2006) from Maharashtra, rest of Maharashtra from India this species also showed their occurrence such as, Assam, Bihar, Chandrapur, Meghalaya, Uttar Pradesh, and West Bengal. This pseice also showed their distribution from Bangladesh, Hong Kong, Nepal, and Pakistan.
*Rhodischnura nursei* showed their occurrence from Pune, Nagpur (Kulakarni *et al.*, 2004), Chandrapur (Kulkarni *et al.*, 2006) of Maharashtra. From India this species showed their occurrence from Assam, Bihar, Chandigarh, Meghalaya, Uttar Pradesh, and West Bengal and this species also showed worldwide in distribution with various countries Bangladesh, Hong Kong, Nepal, and Pakistan etc.

*Copera ciliata* reported from the Nagpur (Kulkarni *et al.*, 2004); Mumbai (Kulkarni *et al.*, 2006) of Maharashtra. Rest of Maharashtra the other states belonging from India such as, Assam, Himachal Pradesh, Manipur, Meghalaya, Nicobar, Uttar Pradesh and West Bengal. From world this species also found from Bangladesh, China, Hong Kong, Indonesia, Japan, Malaysia, Taiwan, Thailand and Vietnam etc.

*Copera marginipes* also showed occurrence from Buldhan, Mumbai, Nagpur, Osmanabad, Pune, Satara, Sindhudurg, Wardha, Bhandara (Talmale & Kulkarni, 2003); Amaravati (Kulkarni & Prasad, 2005), Chandrapur (Kulkarni *et al.*, 2006) rest of India its occur from Assam, Himachal Pradesh, Manipur, Meghalaya, Rajasthan, Tamil Nadu, Uttarkhand and West Bengal, Karnataka, Kerala, Madhya Pradesh, Manipur, Meghalaya, Rajasthan, Tamil Nadu, Uttarakhand and West Bengal. This species also found from Bangladesh, China, Hong Kong, Malaysia, Myanmar, Nepal, Sri Lanka, Taiwan, Thailand and Vietnam.

Copera vittata showed their occurrence from Maharashtra of Pune, Nagpur, (Kulkarni *et al.*, 2004), Chandrapur (Kulkarni *et al.*, 2006), Mumbai (Kulkarni *et al.*, 2006) and rather than Maharashtra there were other states are also showed their occurrence from Karnataka, Kerala, and Tamil Nadu. The main difference in between marginipes and vittata is showed by photographic illustration of anal appendages from result and discussion section. The Family: Platystictidae showed their distribution from Kolhapur in which Maharashtra state which showed occurrence of the one species of this family including Damselflies *Protosticta gravelyi* and its occurrence found from Kerala and Western Ghats.

Family: Protoneuridae which consisting of *Disparoneura quadrimaculata* commonly called as bamboo tail which showed their occurrence from Ahmednagar,
Pune, Raigad, Satara (Fraser, 1936; Prasad, 1996); Nagpur (Kulkarni et al., 2006), Chandrapur (Kulkarni et al., 2006) and rather than India this species also distributed from the Bihar, Delhi, Karnataka, Madhya Pradesh, Rajasthan and West Bengal. *Ellatoneura nigerrima* reported from Akola, Chandrapur, Nanded, Solapur, Pune (Fraseri 1924, Prasad, 1996). Rather than India Cetral and western India they showed their distribution.

*Lestes elatus* which showed hockey stick like paired remarkable marking over thorax region and also showed their occurrence from the forest region belonging from Family: Lestidae and reported from Nagpur, Rather than India Goa, Karnataka, Kerala, Madhya Pradesh, Orissa and Tamil Nadu. Their distribution showed their occurrence from Sri Lanka.

*Lestes umbrinus* which showed their thorax in dull colouration and without any marking also belongs from Family: Lestidae this damselflies found in dry forest, showed their occurrence from the Aurangabad, Dhule, Nagpur, Bhandara (Talmale & Kulkarni, 2003) from Maharashtra rather than Maharashtra this species also showed their occurrence from other state included Andra Pradesh, Bihar, Chandigarh, Gujarat, Madhya Pradesh, Orissa, Uttar Pradesh and West Bengal. This species also showed their distribution from world such as, Bangladesh, China, Iran, and Myanmar etc.

*Libellago Lineata* reported their occurrence from Ahmednagar, Chandrapur, Nanded, Nashik and Pune rather than Karnataka and Kerala occurs Myanmar and Sri Lanka. *Rhinocypha bisignata* also showed their occurrence from Pune, Sindudurgh, and Wardha of Maharashtra. Rather than Maharashtra this species also found from Karnataka, and Kerala, Orissa and South India. And found their unique occurrence from world from Nepal.

*Vestalis gracilis* reported from Mumbai (Maharashtra), apart from Maharashtra this species showed their distribution from Andamans, Arunachal Pradesh, Assam, Eastern Goa, Keral, Madhya Pradesh, Madhya Pradesh, Manipur, Tripura, Western Ghat and West Bengal and also showed their distribution in world such as, Bangladesh, Kampuchea, Loas, Malaysia, Myanmar, Nepal, Thailand, Tibet and
Vietnam. *Vestalis apicalis* showed their occurrence from Mumbai (Kulakarni *et al.*, 2006) rather than Assam, Keral, Orissa, Western and Eastern Ghats and west Bengal. This species also found from Myanmar.

Joshi *et al.*, (2014) made Conservation related to the fauna and flora to conserve the diversity and integrity of flora and fauna among the natural ecosystem to safeguard the genetic diversity of species on which their evolution depends. Babu *et al.*, (2013) made checklist of the endemic species which are restricted within the geographic region, their documentation is very much important in characterization of the Biogeographical province. The area which showed higher endemism is very important aspect for the speciation with change in habitat climate.

The place which showed endemism is important for conservation and management of the Biodiversity. Most of the endemic species of the odonates species showed their narrow geographic distribution. Western Ghats, Western Himalayas, Indo-Burmese (Andaman Iceland’s) and Nicobar Iceland’s are the four global diversity hotspots of the world on which odonata fauna from India are highly concentrated.

Mitra (2002) reported 205 endemic species of the odonata from India still there are many countries also have some publications which report endemic species from the world. The endemic Odonata fauna of Peninsular India, mostly including Western Ghats was described by Subramanian 2007, Mitra *et al.*, 2011 and Subramanian *et al.*, 2011. The endemic species have been reported from India by various taxonomists while doing extensive survey on the diversity, distribution and abundance endemic species of the each species was determined mostly by world distribution given by Tsuda (2000).

overall investigation of the Odonata fauna over endemism altogether 186 species and subspecies belonging to 67 Genera of Odonata had reported from Indian territories.


Family: Protoneuridae showed 20 species in endemism such as, *Caconeura gomphoides* (Rambur, 1842), *Caconeura obscura* (Fraser, 1933), *Caconeura ramburi* (Fraser, 1922), *Caconeura risi* (Fraser, 1931), *Caconeura t-coerulea* (Fraser, 1933), *Disparoneura apicalis* (Fraser, 1924), *Disparoneura quadrimalulata* (Rambur, 1842), *Elattoneura atkinsoni* (Selys, 1886), *Elattoneura campioni cacharensis* (Fraser, 1933), *Elattoneura nigerrima* (Laidlaw, 1917), *Elattoneura nihari Mitra, 1995*, *Elattoneura souteri* (Fraser, 1924), *Elattoneura tetrica* (Laidlaw, 1917), *Esme cyaneovittata Fraser, 1922*, *Esme longistyla* Fraser, 1931, *Esme mudiensis* Fraser, 1931, *Melanoneura*
bilineata Fraser, 1922, Phylloneura westermanni (Selys, 1860), Prodasineura verticalis andamanensis (Fraser, 1924) and Prodasineura verticalis annandalei (Fraser, 1921).

Super family: Lestoidea with Family: Lestidae showed 7 species in endemism such as, Indolestes assamicus Fraser, 1930, Indolestes pulcherrimus (Fraser, 1924), Lestes garoensis Lahiri, 1987, Lestes nigriceps Fraser, 1924, Lestes Patricia Fraser 1924, Lestes praemorsus sikkima Fraser, 1929 and Orolestes durga Lahiri, 1987. Family: Megapodagrionidae showed one species of endemic damselflies such as, Burmargiolestes laidlawi Lieftinck, 1960 & Family: Synlestidae showed two species of endemism such as, Megalestes lieftincki Lahiri, 1979 and Megalestes raychoudhuri Lahiri, 1987.

Super family: Calopterygoidea and Family: Calopterygidae showed 3 species in endemism Echo margarita tripartita Selys, 1879, Vestalis apicalis Selys, 1873 and Vestalis submontana Fraser, 1934. Family: Chlorocyphidae 8 species are under endemism such as, Calocypha laidlawi (Fraser, 1924) , Libellago andamanensis (Fraser, 1924) , Libellago blanda (Selys, 1853) , Libellago balus Hamalainen, 2002, Rhinocypha bisignata Selys, 1853 , Rhinocypha hilaryae miao Lahiri and Sinha, 1991 , Rhinocypha perforata beatifica Fraser, 1927 and Rhinocypha vitrinella Fraser, 1935.

Family: Euphaeidae showed 9 species in endemism such as, Anisopleura lieftincki Prasad and Ghosh, 1984 , Anisopleura subplatystyla Fraser, 1927 ,Anisopleura vallei St. Quentin, 1937 ,Bayadera chittaranjani Lahiri, 2003 , Bayadera kali Cowley, 1936 , Dysphaea ethela Fraser, 1924, Euphaea cardinalis (Fraser, 1924) , Euphaea dispar Rambur, 1842 and Euphaea fraseri (Laidlaw, 1920).

Family: Platystictidae showed endemic species of damselflies such as, \textit{Drepanosticta annandalei} Fraser, 1924; \textit{Platysticta deccanensis} Laidlaw, 1915; \textit{Protosticta antelopoides} Fraser, 1931; \textit{Protosticta davenporti} Fraser, 1931; \textit{Protosticta damacornu} Terzani and Carletti, 1998; \textit{Protosticta fraseri} Kennedy, 1936; \textit{Protosticta gravelyi} Laidlaw, 1915; \textit{Protosticta hearseyi} Fraser, 1922; \textit{Protosticta rufostigma} Kimmins, 1958; and \textit{Protosticta sanguinostigma} Fraser, 1922.

Family: Protoneuridae showed endemic 16 species of the Damselflies from India such as, \textit{Caconeura gomphoides} (Rambur, 1842); \textit{Caconeura risi} (Fraser, 1931); \textit{Disparoneura quadrimaculata} (Rambur, 1842); \textit{Argia quadrimaculata}; \textit{Chloroneura quadrimaculata}, Laidlaw,1917; \textit{Disparoneura quadrimaculata}, Davies & Tobin,1984; \textit{Elattoneura atkinsoni} (Selys, 1886); \textit{Elattoneura campioni cacharensis} (Fraser, 1933); \textit{Elattoneura nigerrima} (Laidlaw, 1917); \textit{Elattoneura nihari} Mitra, 1995; \textit{Elattoneura souteri} (Fraser, 1924); \textit{Elattoneura tetrica} (Laidlaw, 1917); \textit{Esme mudiensis} Fraser, 1931; \textit{Melanoneura bilineata} Fraser, 1922; \textit{Phylloneura westermanni} (Selys, 1860); \textit{Prodasineura verticalis andamanensis} (Fraser, 1924); \textit{Prodasineura verticalis annandalei} (Fraser, 1921).

Super family: Lestoidea with Family Lestidae commonly called as spread wings showed seven endemism species such as, \textit{Indolestes assamicus} Fraser, 1930; \textit{Indolestes pulcherrimus} (Fraser, 1924); \textit{Lestes garoensis} Lahiri, 1987; \textit{Lestes nigriceps} Fraser, 1924; \textit{Lestes patricia} Fraser 1924; \textit{Lestes praemorsus} sikkima Fraser, 1929 and \textit{Orolestes durga} Lahiri, 1987.

Among the 503 species and subspecies of Indian Odonata, there were 186 species (as percentiles point of view it comprises 37%) belonging to 67 genera of odonata are endemic to India. A good number of these species/ subspecies are restricted in two biodiversity hotspots of India, Western Ghats and North east India. 76 species are confined to Western Ghats only and 55 species to North east India. Five genera of Damselfly are recorded as endemic to India consisting five Zygoptera genera i.e., \textit{Caconeura}, \textit{Esme}, \textit{Melanoneura}, \textit{Phylloneura} and \textit{Calocypha}. The genus \textit{Caconeura} is epidemic to peninsular India.
A total 80 species of Zygoptera are endemic to India. Among this 38 species are distributed in Western Ghats and 33 species are recorded from Eastern Himalaya region. Only 5 species of them are recorded from Western Himalaya, 14 species are belonging from Peninsular India and 6 species from Andaman and Nicobar Islands. The Eastern Himalaya has representatives of all the families. The families such as Megapodagrionidae and Synlestidae are found only in this region.

Most of these endemic species have restricted their distribution, confined to some part of the country Such as, Agriocnemis splendidissima, Agriocnemis piersis, Disparoneura quadrimaculata and Rhinocypha bisignata. Mitra, 2002 reported some species damselflies were previously known as endemic. But in recent literature it was showed that their distributions from neighbouring countries like Pakistan, Nepal, Bhutan.

Suborder- Zygoptera belonging Family- Coenagrionidae showed their endemism 4 species from Eastern Himalaya, 3 species from Western Himalaya, 6 species from Western Ghats, 1 species from Andaman & Nicobar Islands and 3 species Peninsular India. Likewise that Family: Platycnemididae showed their endemic species such as, 8 species from Eastern Himalaya, from Western Himalaya, Western Ghats and Peninsular India comprises only one species each.

Family: Platystictidae consist of 2 species from Eastern Himalaya, 1 species from Western Himalaya and Andaman & Nicobar Islands. While 8 species from Western Ghats. Family: Protoneuridae showed 2 species from eastern Himalaya, 13 species from Western Ghats, 1 species from Andaman & Nicobar and 6 species from Peninsular India.

Family: Lestidae consist of 4 from Eastern Himalaya, 2 species from Western Ghats and 1 species from Peninsular India. Family: Megapodagrionidae showed only 1 endemic species from peninsular India. Family: Synlestidae also showed 2 species from Eastern Himalaya; Family: Calopterygidae showed 2 endemic species of Damselflies from Eastern Himalaya and Western Ghats each. While Family: Chlorocyphidae showed 3 endemic species from eastern Himalaya, 2 species Western Ghats, 3 species from Andaman & Nicobar and 1 species from Peninsular India.
The Last endemic family: Euphaeidae also showed their endemism such as, 5 species from Eastern Himalaya, 4 Species from western Ghats and only one species reported from Peninsular India. In such a way that overall combination Eastern Himalaya showed 33 endemic species of Damselfly, Western Himalaya's species, Western Ghats 38 species, Andaman & Nicobar 6 species and 14 species from Peninsular India Reported.

Koparde et al., (2011) reported 6 species of damselfly community from Flyash Ponds of NTPS, Nasik Maharashtra. Such as, Ceriagrion coromandelianum (Coromandel Marsh Dart), Ischnura aurora (Golden Dartlet), Ischnura senegalensis (Senegal Golden Dartlet), Pseudagrion microcephalum (Blue Grass Dartlet), Pseudagrion rubriceps (Saffron faced Blue Dart) and Lestes elatus (Emerald Spreadwing)

Tijare and Patil (2012) made survey of odonates from Gorewada National Park during year July 2010 to June 2011. In overall study they revealed 29 species of the odonates around Gorewada national park, Nagpur belonging to 24 Genera and 06 families. Ceriagrion coromandelianum was mostly occurring species in whole one year survey from Gorewada, Nagpur. Ischnura senegalensis was found from pollution free environment and also found from flowing and stagnant water areas. The found species are Ceriagrion coromandelianum, Ischnura aurora, Agriocnemispygmea, Rhodishnura nerei, Copera marginipes, Lestes viridulus and Lestes umbrinus etc.

Tijare and Patil (2012) visited wetland of Gorewada National Park region in the Months of July 2010 to June 2011. The wetland which showed various odonata fauna but in case of them one prominent feature occurred on the basis of seasonal, Perennial, surrounded by trees , shrubs, Bushes and Grass meadows, this type of the mentioned habitat usually used by the certain species of the Damselflies for breeding purposes. Collection was usually done in every Sunday, at optimum temperature range 14 C° to 45 C°. Damselfly Species were caught by Insect collecting Net, and identified by proper taxonomical keys and whenever they are identified they released to the atmosphere to maintaining the ecosystem balanced.
Andrew et al., 2011 observed Ceriogrion coromandelianum (Yellow Marsh Dart) were observed through the year. Copera marginipes (Yellow bush dart) flies very close to the ground level and their flight had been reported in the month of August to November. Lestes species were found in dry season October to April and usually among the dry and across long grasses and breed in marshy places and steamy areas and made swarming in September and December by Kulkarni et al., 2004. Rhodischnura nersei was well distinguished due to its bright colouration and this species were observed in winter and Monsoon. Ischnura aurora was found in between grasses and marshy places around the water bodies in rainy and winter seasons. Kulkarni et al., reported Agriocnemispygmea also showed their habitate in grasses and marshy places in rainy and winter places.

Subramanian and Sivaramakrishnanan (2005) reported as the diversity and distribution of stream insect communities in three different habitats and 33 microhabitats were explored by using data collected from 39 localities of the Western Ghats. The habitats for aquatic insect communities of riverine ecosystems can be seen within in various scales. Odonates had range in size from particles of few millimeters across to the entire drainage reverine basin. The importance’s of habitat and microhabitat distribution in understanding the distribution of stream insects and developed biomonitoring tools over it.

Structurally complex microhabitat harbors more taxa of damselflies. The diversity and abundance of odonates may vary across habitats. The microhabitat richness was positively correlated and altitude negatively correlated with taxa richness in the cascades and riffles. In pools and cascades, per cent canopy cover and average annual rainfall were both positively correlated with taxa richness.

The Pools are habitats with minimum water flow show a great variation in aquatic invertebrate diversity. For example, in the stable streams of New Zealand, riffles had higher taxa richness than pools, but there was no difference between the habitats in an unstable stream. However, in a review of seventeen studies, there was no significant difference in taxa richness in pools.
Tiple et al., (2011) reported Damselfly fauna from Kanha National Park which was famous for the Tigers on which they revealed 36 species of the Odonata belonging from 2 suborders and 7 Families in which Family: Coenagrionidae (8 species) Viz., Agriocnemis Pygmaea (Rambur, 1842), Pseudagrion decorum (Rambur, 1842), Ischnura aurora (Brauer, 1865), Ischnura senegalensis (Rambur, 1842), Ceriagrion coromandelianum (Fabricius, 1798), Pseudagrion microcephalum (Rambur, 1842), Pseudagrion rubriceps (Sely,1876) and Rhodischnura Nersei (Morton,1907). Family: Protoneuridae showed Disparoneura quadrimaculata (Rambur, 1842) and Prodasineura verticalis (Sely, 1860); Family: Lestidae showed occurrence of the Lestes umbrinus (Sely, 1891) and Family: Euphaeidae showed Dysphaea ethela (Fraser, 1924).

Sonawane (2014h) made study on comparative field studies on Damselflies (Zygoptera) from Kukadi and Ghod River, (Pune: Maharashtra). The present study describe occurrence of the damselfly species from two different localities from Junnar and Ambegaon taluka. Their were total 11 species of the damselflies had been reported which belongs to four different Families. As compare to the Kukadi River more polluted than Ghod River because of sewage water disposal into River. A study area shows rich diversity than Ghod River collected. The survey was carried 1st June 2013 to 1st October 2013. Depending upon conservation status need to be conserved related areas so as made good diversity.

Tiple et al., (2013) reported a survey of water bodies of the Vidarbha region of central India was conducted in the year 2006-2012. A total of 82 species of odonata recorded. This latest study made addition of 13 new species of the odonata. From Vidarbha region and 6 species made addition for Maharashtra state. Out of all collection total, 23 species were abundant or very common (VC), 26 species were common (C), 24 species rare (R) and 9 species very rare (VR).

The Damselfly species Mortonagrion varralli and Copera ciliata, which were recorded by earlier taxonomist in this region, were not yet found during this survey. Central India covers the districts of Amravati, Akola, Bhandara, Buldana, Chandrapur, Gadchiroli, Gondia, Nagpur, Wardha, Washim and Yavatmal. Overall survey areas
consist of terrain, major hill ranges, wetlands, such as, ponds, Lakes and the Satpura hills lies to the North side of Vidarbha.

Tiple et al., (2014) made survey from the Vidarbha region showed from Wainganga River which is major tributary of the Godavari, is the largest river of Vidarbha. There are six rivers such as, Khandu, Khapra, Sipna, Gadga, Dolar, Purna, and Tapti River. The zygoptera reported from the survey time such as, Family: Protoneuridae consisting species *Caconeura ramburi* (Fraser, 1922) showed Very Rare occurrence from Pench National Park, From Nagpur city *Disparoneura quadrimaculata* (Rambur, 1842) Common throughout the Vidarbha.

The *Prodasineura verticalis* (Selys, 1860) is occurred from Common Gorewada, Futala and Ambazari Lake, of Nagpur city. Family: Platycnemididae showed occurrence of *Copera ciliata* (Selys, 1963) rare from Tadoba National Park, from Chandrapur *Copera marginipes* (Rambur, 1842) showed very common occurrence throughout Vidarbha *Aciagrion occidentale* Laidlaw, 1919 Very common.

Sonawane (2013 d) made comparative field studies on Damsellflies of Pune district including Mula and Mutha river confluence. As Mula River rises from Mulshi dam, as whenever Mula River comes in Pune city poured into the Mula River comes to open into Mutha River which is called as Mula- Mutha confluence.

Mula-Mutha River is part of the western ghats of Maharashtra state. Collection was done from Bpodi Bridge and Deccan Region. This study recorded 12 species of Damsselflies from both the collection sites. Out of which Mula River showed 10 species and 8 species of from Mutha River. Family: Coenagrionidae showed 9 species. In case of Mula River it was 8 species have been recorded and in case of Mutha River 9 species recorded.

There were total three families were reported in which family: Chloroclyphidae, Platycemididae and Protoneuridae these three families showed total 1 species each. This study indicates diversity of the damsleflies in adequate ammount; most of the species were reported from the Mula River, the reason being less polluted areas. Mula
River was located from low human disturbance and also showed abundant amount of the hydrophytes at collection sites.

The occurrence of the good diversity of damselflies in Mula than Mutha River also gives a good indication to develop conservation strategies over riverie basin. There are five species which showed cosmopolitan habitat also reported in this study such as, *Ischnura senegalensis, Ischnura aurora, Ceriagrion coromandelianum, Agriocnemois pygmea* and *Pseudagrion decorum*.

In this study 12 species reported such as, *Agriocnemis pygmaea* (Rambur, 1842), *Enallagma Parvum* (Sely, 1876), *Agriocnemis femina* (Brauer, 1865), *Ischnura aurora* (Brauer, 1865), *Ischnura senegalensis* (Rambur, 1842), *Ceriagrion coromandelianum* (Fabricius, 1798), *Pseudagrion decorum* (Rambura, 1842), *Pseudagrion rubriceps* Sely, 1876, *Rhodishnura nersei* (Morton, 1907), *Libellago lineata* (Burmeister, 1839) *Disparoneura quadriramulata* (Rambur, 1842) and *Copera marginipes* (Rambur, 1842).

Tiple et al., (2013) reported some species of the damselflies from Vidarbha region of Maharashtra state in which family: Protoneuridae revealed 3 species such as *Caconeura ramburi* (Farser, 1922) which is very common from Pench National park, Nagpur, *Disparoneura quadriramulata* (Rambur, 1842) which is common throught out Vidarbha, and *Prodasineura verticalis* (Sely, 1963) which is common through Gorewada, Futala & Ambazari lake, Nagapur city.

Family: Platycnemididae also revealed 3 species of damselfly such as, *Copera ciliata* (Sely, 1963) which showed their occurrence rare from Tadoba national Park, Chandrapur. *Copera vittata* Laidlaw, 1917 showed common occurrence throughout Vidarbha. *Copera marginipes* (Rambur, 1842) showed very common throughout Vidarbha.

Family: Coenagrionidae showed 18 species of Damselflies with 9 genera. In which *Aciagrion pallidum* (Sely, 1891) showed their common occurrence from Futula & Ambazari Lake, Nagpur city. *Aciagrion occidentale* Laidlaw, 1919 showed very rare in
Agriocnemis Lacteola (Sely, 1877) showed rare in occurrence from Ambazari Lake, Nagpur City. Agriocnemis femina (Brauer, 1868) showed common occurrence throughout Vidarbha. Agriocnemis pygmaea (Rambur, 1842) showed very rare occurrence throughout the Vidarbha region. Paracercion calamorum (Ris, 1916) showed rare occurrence from Nagpur city. Paracercion malayanum (Sely, 1876) showed rare occurrence from Futula of Nagpur city.

Agriocnemis femina (Brauer, 1868) showed common occurrence throughout Vidarbha.

Paracercion calamorum (Ris, 1916) showed rare occurrence from Nagpur city.

Paracercion malayanum (Sely, 1876) showed rare occurrence from Futula of Nagpur city.

Ceriagrion cerinorubellum (Brauer, 1865) showed rare occurrence from Gorewada & Ambazari Lake of Nagpur city. Ceriogrion coromandelianum (Fabricius, 1798) showed very common throught the Vidarbha region. Ceriogrion olivaceum Laidlaw, 1914 showed rare occurrence from Tadoba & Pench National Park. Enallagma parvum (Sely, 1876) showed their common occurrence throughout the Vidarbha. Ischnura aurora (Brauer, 1865) showed very common occurrence throughout the Vidarbha. Ischnura senegalensis (Rambur, 1842) showed very common occurrence throughout the Vidarbha. Moronagrion Varrali (Fraser, 1920) showed rare in occurrence from Nagpur city and Paddy field Bhandara. Pseudagrion decorum (Rambur, 1842) showed very common occurrence throughout Vidarbha.

Pseudagrion hypermelas (Sely, 1876) showed rare occurrence from Ambazari Lake and Nagpur city. Pseudagrion malabaricum Fraser, 1924 showed common occurrence from Gorewada, Futula & Ambazari Lake of Nagpur city. Pseudagrion microcephalum (Rambur, 1842) showed rare occurrence from Gorewada, futula and Ambazari Lake, Nagpur city. Pseudagrion rubriceps (Sely, 1876) showed very common occurrence throughout Vidarbha. Pseudagrion spencei Faser, 1922 showed common occurrence from Nagpur city, Tadoba & Pench National Park & Bor wildlife Santuary and Rhodishnura nersei (Morton, 1907) showed very common occurrence throughout Vidarbha.

Family: Lestidae also revealed 3 species of the damselflies in which Lestes elatus, Hagen & Sely, 1862 srom Ambazari Lake showed rare occurrence of Nagpur city. While Lestes umbrinus Sely, 1891 showed very common occurrence throughout

occurrence from Sonegao Lake, Nagour city and Tadoba National Park, Chandrapur.
Vidarbha and *Lestes viridulus* Rambur, 1842 showed rare occurrence from Nagpur city, Tadoba National Park, Pench National Park, Bor Wild Life Sanctuary. Family: Chlorocyphidae showed only one species of the *Libellago lineata indica* which showed common occurrence throughout Vidarbha.

The Vidarbha region comprises 30% diversity of the odonates which is unique resource of Odonates diversity and the present observations evaluates occurrence of damselfly species into the valuable habitat for Odonata, it may happened due to the dense vegetation of the perennial plants, rivers, dams, lakes, streams, temporary and permanent water bodies.

Corbet, (1999) reported as Damselflies are voracious predators in larval as well as adult life stages and feeding exclusively on living prey. Larvae of Damselflies detect prey visually and with the help mechanoreceptors, primarily made a mechanism wait and watch in other words sit-and-wait predators. This is a most successful strategy, in this way with prehensile mouthparts (labium) that can be extended to capture prey. They act as top predator in food chain. Larval stages of Damselflies showed caudal gills, and swim by paddling with their legs, Adult of damselflies have long wings with a conspicuous nodus and a pterostigma.

Sanchez-Herrera and Ware (2010) reported as Odonata are Invaluable models for studies in ecology, behavior, evolutionary biology and biogeography of various places. Damselflies which showed conspicuous behavior, striking colours and relatively small number of species has made scope in odonatological study. Damselflies are the top predators in freshwater ecosystems, including lotic (rivers) and lakes (lotic). The Biogeography of Damselflies occurred during last 5 decades for understanding of the ecology and evolution of Odoanta group (Cordoba-Aguilar, 2008).