



A study of dragonflies and damselflies diversity in medicinal garden of Indira Institute of Pharmacy in Devrukh tehsil district of Ratnagiri

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Abstract

The study investigates the diversity of dragonflies and damselflies in the medicinal garden of Indira Institute of Pharmacy, located in Devrukh Tehsil, District Ratnagiri. The objective of the research was to assess the species richness, distribution patterns, and ecological significance of these species within the medicinal garden ecosystem. A comprehensive survey was conducted to document the presence of both dragonflies and damselflies in various habitats of the garden. The methodology included visual observations, photographic records, and species identification using both morphological and behavioural characteristics. The study identified a total of 11 species of damselflies and 23 species of dragonflies, with notable diversity in terms of habitat preferences, with dragonflies predominantly observed near water sources and damselflies in the vegetated areas. The findings emphasize the importance of medicinal gardens as valuable microhabitats for preserving Odonata diversity and highlight the potential role of these insects as bioindicators for assessing the health of garden ecosystems.

Keywords: Dragonfly, damselfly, medicinal plant garden, Sadavali village

Introduction

Dragonfly is a carnivor predator found near to freshwater and mostly on the moist soil. Dragonfly plays a key role in the biological system as it is seed disperser and also keeps mosquitoes at bay which also has positive impact on pest management ^[1]. Dragonflies have gained a nickname “mosquito hawk” as a adult dragonfly feeds on approximately 30 to 100 mosquitoes a day. They eat small insects, flies and also show Cannibalism. Dragonflies are also called as “Expert fliers” as they can fly in forward – backward and up – down directions. They are also included in world’s fastest flying insects, as they have ability to fly roughly upto 35 miles per hour. They possess a field view of nearly 360 degree. ^[2] Design of the helicopter was inspired by dragonfly due to such amazing features. Dragonflies have total five eyes in which three are simple eyes and the other two are compound eyes with single lens in each of the eye. Male and female dragonflies can be differentiated visually. Females does not have a bulge under segment where secondary genitalia are located whereas males have bulge present. And another difference is that males have larger abdomen than females. There exists a creature which resembles to dragonfly but is smaller in size as compared to dragonfly and identifies as Damselfly. ^[3] Damselfly and dragonfly can be differentiated based on few characters as their body shape, wing shape and position of the wing at the rest. When it comes to body shape, damselflies have longer and thinner body whereas dragonflies have shorter and thicker body with bulky body shape. ^[4] In case of wings, Damselflies has similar size of forewings and hindwings but dragonflies have broader hindwings than forewings. The position of wings of damselflies when it is rest is like the wings which are usually folded and heldup closely together above its body, but the wings of dragonflies are spread flat out like an airplane when it is at rest. ^[5]

Material and method

Western Ghats is an exceptional location due to its breathtaking beauty. Dragonflies are attracted towards the Western Ghats because of the majestic climate and geographical features which creates a heaven for them. Sadavali is the village, which lies in Sangameshwar taluka located in the Ratnagiri district. The village is located at 17.0883° N and 73.6085° E. ^[6] It has an average elevation of 125 meters. The selected study area has represented in Fig 1 and 2. Sadavali has mesmerizing landscape as it is surrounded mostly by mountains. The scenic beauty it has makes it a pleasant place. The survey on dragonflies diversity was carried out in the period of September to December 2024. The survey was carried out in the medicinal garden of the Institute and near the water bodies of vicinity. The photographs of various dragonflies were captured by using Camera (Canon Rebel T6 mounted with the 75-300mm lens). ^[7]

Results and discussion

The study on the diversity of dragonflies and damselflies in the medicinal garden of Indira Institute of Pharmacy, Devrukh Tehsil, District Ratnagiri, revealed a total of 11 species of damselflies and 23 species of dragonflies. Fig 3 shows graphical representation of damselflies and dragonflies. The total five families of damselflies were found at selected study area. The family wise distribution of damselflies is highlighted in Fig 4.

Conclusion

Both dragonflies and damselflies, are important bioindicators of water quality and ecosystem health. The presence of a high diversity of species in the medicinal garden suggests that the water sources and overall ecological conditions in the garden are relatively healthy. Moreover, these insects play a crucial role in controlling

mosquito populations, acting as natural pest regulators, and contributing to the balance of the garden's ecosystem. They

also serve as prey for other predators, adding to the food web.



Fig 1: Map of selected study area



Fig 2: Photographic image of selected study area

Table 1: Details of damselfly and dragonfly found at selected study area

S.no.	Scientific Name	Common Name	Family	IUCN Status
1	<i>Trithemis aurora</i>	Crimson Marsh Glider	Libellulidae	Least Concern
2	<i>Orthetrum pruinosum</i>	Crimson-tailed Marsh Hawk		Least Concern
3	<i>Orthetrum taeniolatum</i>	Small Skimmer		Least Concern
4	<i>Rhodothemis rufa</i>	Rufous Marsh Glider		Least Concern
5	<i>Tholymis tillarga Fabricius</i>	Coral-Tailed Cloudwing		Least Concern
6	<i>Trithemis pallidinervis Kirby</i>	Long-Legged Marsh Glider		Least Concern
7	<i>Orthetrum sabina Drury</i>	Green Marsh Hawk		Least Concern
8	<i>Rhyothemis variegata Linnaeus</i>	Common Picturewing		Least Concern
9	<i>Diplacodes lefebvrii Rambur</i>	Black Ground Skimmer		Least Concern
10	<i>Diplacodes trivialis Rambur</i>	Blue Ground Skimmer		Least Concern
11	<i>Indothemis carnatica Fabricius</i>	Light-tipped Demon		Least Concern
12	<i>Hylaeothemis apicalis Fraser</i>	Blue Hawklet		Data deficient
13	<i>Bradinopyga konkanensis</i>	Konkan Rockdweller		Not Evaluated
14	<i>Camacinia gigantea Brauer</i>	Giant Forest Skimmer		Least Concern
15	<i>Acisoma panorpoides</i>	Trumpet Tail		Least Concern
16	<i>Brachythemis contaminata</i>	Ditch Jewel		Least Concern
17	<i>Bradinopyga geminata</i>	Granite Ghost		Least Concern
18	<i>Cratilla lineata</i>	Emerald-banded Skimmer		Least Concern
19	<i>Crocothemis servilia</i>	RuddyMarsh Skimmer		Least Concern
20	<i>Lathrecista asiatica</i>	Asiatic Blood Tail		Least Concern
21	<i>Neurothemis fulvia</i>	Fulvous Forest Skimmer		Least Concern
22	<i>Orthetrum glaucum</i>	Blue Marsh Hawk		Least Concern
23	<i>Trithemis festiva</i>	Black Stream Glider		Least Concern
24	<i>Libellago lineata</i>	River Heliodor	Chlorocyphidae	Least Concern

25	<i>Libellago indica</i>	<i>Fraser Southern Heliodor</i>		Least Concern
26	<i>Heliocypha bisignata</i>	<i>Stream Ruby</i>		Least Concern
27	<i>Ceriagrion coromandelianum</i>	<i>Coromandel Marsh Dart</i>	Coenagrionidae	Least Concern
28	<i>Copera marginipes Rambur</i>	<i>Yellow Bush Dart</i>		Least Concern
29	<i>Copera vittata Selys</i>	<i>Blue Bush Dart</i>	Platycnemididae	Least Concern
30	<i>Pseudocopera ciliata Selys</i>	<i>Pied Bush Dart</i>		Least Concern
31	<i>Disparoneura quadrimaculata</i>	<i>Black winged Bambootail</i>		Least Concern
32	<i>Lestes elatus</i>	<i>Emerald Spread Wing</i>	Lestidae	Least Concern
33	<i>Vestalis gracilis</i>	<i>Clear-winged Forest Glory</i>		Least Concern
34	<i>Vestalis apicalis</i>	<i>Black-tipped Forest Glory</i>	Calopterygidae	Least Concern

Table 2: Relative abundance of damselfly

S. No.	Family	No. of flies	Relative abundance
1.	Chlorocyphidae	3	27.27272727
2.	Coenagrionidae	1	9.090909091
3.	Platycnemididae	4	36.36363636
4.	Lestidae	1	9.090909091
5.	Calopterygidae	2	18.18181818

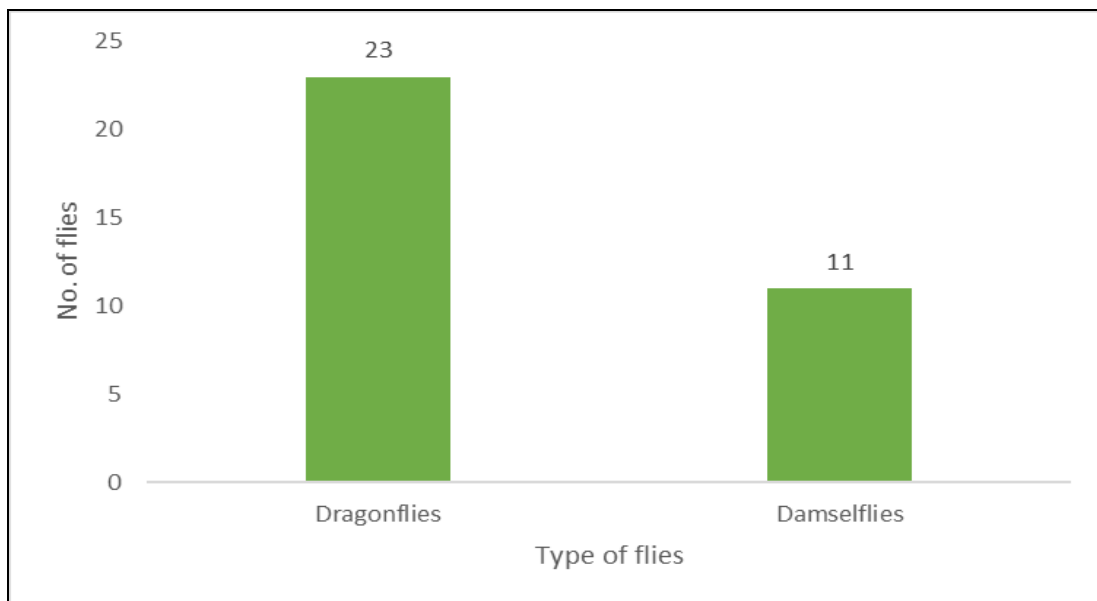


Fig 3: Graphical representation of identified flies

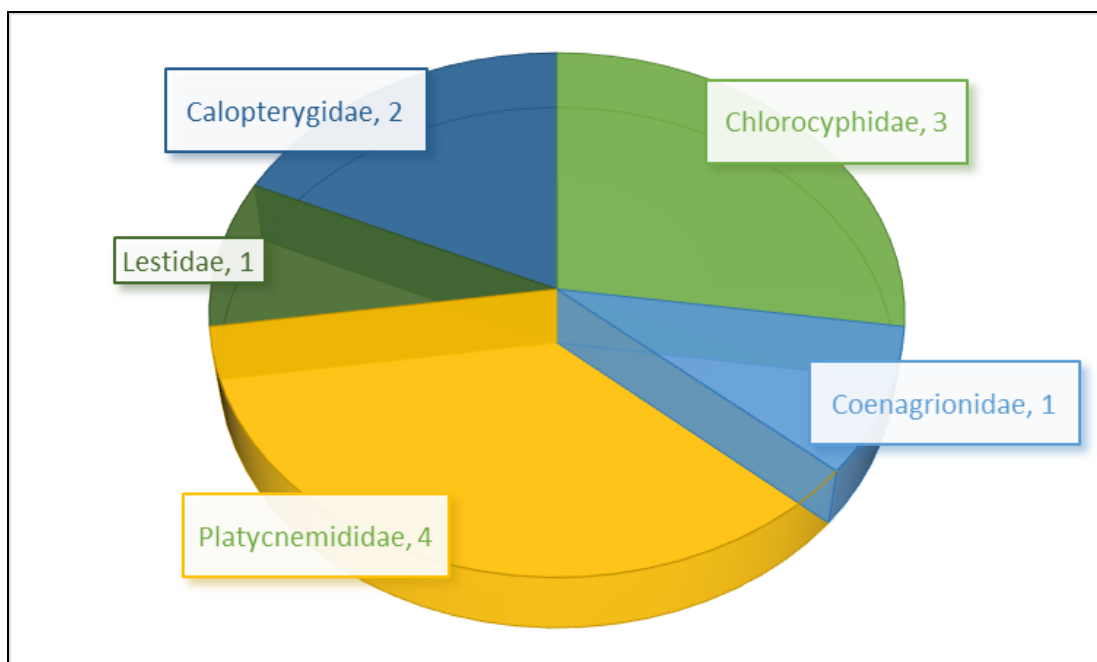


Fig 4: Representation of Damselflies distribution



Fig 5: Photographic representation of dragonflies and damselflies

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