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## **Morphotaxonomic and comparison study of new exploring species of genus pipistrellus (*Pipistrellus Afinecus*) Pakistani Pipistrellus inhabiting in Hyderabad district (Sindh Pakistan)**

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### **Abstract**

Research article should aimed to recorded new species with compare to other species of Pippistrellus which is collected from Hyderabad District there are 25 specimens were collected during the year of 2016 to 2017 that time research work is carried out in Hyderabad District. Some species are belongs to other families and some are belongs to Vespertillinodae (Genus Pipistrellus). The observation of this particular species revealed that it has some identified morphological keys changed from other species that's way morphology and taxonomic is changed of this species with other recorded species of Pakistan. This article is revealed that Hyderabad district has rich fauna of microchiroptera.

**Keywords:** tragus, pollex, exploring, insectivores and transverse ridge, species

### **Introduction**

Hyderabad District is located in province Sindh of Pakistan. It has a rich fauna of microchiroptera. 25 live specimens were collected these specimens are belongs to family Vespertillionidae this family is presented with a large number of genera. Genus Pipistrellus also included in this family. In Pakistan according to T.J Robert 09 species is in record they all are differ with each other according to their morphological characters that's way they all have minor changes in taxonomy as well as they are presented with many varieties in skull. Recorded species of Pipistrellus which is lived in Pakistan named as "*Pipistrellus Pipistrellus*, common Pipistrellus (Schreiber, 1774, Kaup, 1829) *Pipistrellus Ceylonicus* (Kellart 1852) *Pipistrellus javanicus* (Gray 1838, Thomas, 1915) *Pipistrellus Paterculus* (Thomas, 1915) *Pipistrellus Coromandra* (Gray, 1838 Blyth, 1851) *Pipistrellus Tenius mimus or glaucillus* (Temminck, 1840, Wroughton, 1899, again Wroughton 1912) *Pipistrellus Khulii* (Kuhl 1817, again Kuhl 1819) *Pipistrellus Savii* (Bonaparte 1837) *Pipistrellus Scotozous domeri* (Dobson 1875). On the worldwide Pipistrellus are exist with 33 species included with this entire species all this species are also included in (IUCN) red list.

### **Material and Method**

Various surveys were conducted in Hyderabad district during the year of 2016 to 2017. Surveys were collected many species of microchiroptera and bought them to laboratory for study their morphological characters as well as their identification and taxonomic studies.

### **Field equipments**

During data collection strong torch light was used to detect the area of species on night time, on day time after detecting or selecting areas of data collection fishing net or capturing rod was used to capture species from holes of walls and Tupperware were used to capture live species which is crawling on trees or walls after capturing all species that were transferred in cage and brought to laboratory for further studies.

### **Methods**

During study direct method was used. In this method one method were used to capture live specimens from various areas of Hyderabad district.

### During the crawling

Tupperware were used to capture live specimens when the specimens were seen crawling on the day time on walls of rooms or trees. Tupperware placed towards the living specimens and placed a tight wood, plastid piece, between the wall and Tupperware and easily captured them and transfer them in cage for further studies.

### Results

The study was carried out in Hyderabad district during 2016 to 2017. During the study period three families were captured and studied. Vespertilionidae family are most common family exist in Hyderabad this family is captured from various localities of Hyderabad included (Pacca Qila, latifabad unit # 04, American coater, Railway line colony) all this species which is captured belongs to two genera of Vespertilionidae family included in "Myotis and Pipistrellus". In genus Pipistrellus two most revealed species were study one is recorded it is known as "*Pipistrellus Pipistrellus*" Common Pipistrellus and other one is not in record it has unique key morphological characters comparatively other species of Pipistrellus research scholar give the name of this species is "*Pipistrellus Afinecus*". It has unique ear with unique tragus, nose, eyes, color variation is also present but it is not counted because it is change due to climatic or habitat changing.

"*Pipistrellus Afinecus*" is existed with biggest morphological changes with compare to other species of genus Pipistrellus after the comparison without any doubt it is new species in Pipistrellus. Their ears and tragus are changed with other species of genus Pipistrellus their ears is short and triangular

in shape with half moon tragus 10 transverse ridge are present on ears it is shows that they have well developed process of echolocation upper part of their wings has well developed pollex with prominent white nails. It has simple nose with broad nostrils their eyes are unconcealed and easily seen. Eyes up to chin is black in color it shows that this specie is belongs to genus Pipistrellus captured species is female. After dissection and study it shows that it is insectivores feed upon small insects like mosquitoes, spiders and other tree insects. *Pipistrellus Afinecus* length of body 5.12 mm, length of forearms 105 mm, length of hindlimbs 0.7 mm length of ears 0.4 mm length of tail 2.4 mm with web membrane, body weight 10.57 grams (Table 01) shows the color variation in genus Pipistrellus species (Table 02) shows the comparison study of genus Pipistrellus which inhabit Hyderabad district as well as Pakistan.

Genus Pipistrellus are exist with large number of species it is very complex to detect and studied because it is the second largest group of sub family Vespertilioninae. Taxonomy of these genera is depending on their key morphological organs ecological changes as well as skull variations. That's way taxonomy has also wrote with minor changes Research scholar give name of this specie is "*Pipistrellus Afinecus*" it is also belongs to kingdom Animalia, phylum chordate, class mammalian, order chiroptera, sub order microchiroptera, family Vespertilionidae, sub family vespertilioninae, genus Pipistrellus, and species "*Pipistrellus Afinecus*" Afshan 2017. (Table 03) shows the taxonomy or scientific classification of *Pipistrellus Afinecus*.

**Table 1:** Color variation in species of genus Pipistrellus inhabiting in Hyderabad district as well as in Pakistan

Name of specie	Dorsal color	Ventral color	Wings color
<i>Pipistrellus Pipistrellus</i>	Smoky brown	Silky lighter brown	Blackish opaque
<i>Pipistrellus Ceylonicus</i>	Reddish brown	Slightly brown	Black
<i>Pipistrellus Javanicus</i>	Dark brown	Slightly paler with white border	Dark brown
<i>Pipistrellus Paterculus</i>	Olive brown	Grayish olive	Dark brown
<i>Pipistrellus Coromandra</i>	Blackish brown	Paler brown	Black
<i>Pipistrellus Tenuis mimus</i>	Dark brown	Lighter brown	Black
<i>Pipistrellus Kuhlii</i>	Grayish brown	Grayish yellow	Dark black
<i>Pipistrellus Savii</i>	Brown	Grey	Black
<i>Pipistrellus Scotozous</i>	Dark grey brown	Silvery grey	Black
<i>Pipistrellus Afinecus</i>	Brown head to neck or yellowish brown	Yellowish brown	Dark brown

**Table 2:** Comparison in species of genus Pippistrellus inhabiting Hyderabad district as well as in Pakistan

Name of species	Zoologist, years	Variation in ears	Variation in tragus	Variation in nose	Variation in eyes
<i>Pipistrellus Pipistrellus</i>	Schreber, 1774 Kaup, 1829	Slightly tapered and rounded at the tip of the ear	Banana shaped tip bluntly rounded forward curved	Simple nose smoky color	Unconcealed short eyes not seen
<i>Pipistrellus Ceylonicus</i>	Kellart, 1852	Short round ear	Rather narrow tragus	Simple nose swelling muzzles are present	Unconcealed broad swelling eyes easily seen
<i>Pipistrellus Javanicus</i>	Gray, 1838 Thomas, 1915	Short round ear fold to tip	Long straight tragus round on tip	Simple nose bull like snout	Concealed eyes easily seen
<i>Pipistrellus Paterculus</i>	Thomas, 1915	Round black ear	Short flat tragus	Small leaf nose	Unconcealed eyes
<i>Pipistrellus Coromandra</i>	Gray, 1838 Blyth, 1851	Triangular ear	Prominent one third tragus on tip	Blunt muzzle nose	Unconcealed black eyes
<i>Pipistrellus Tenuis mimus</i>	Temminck, 1840 Wroughton, 1899 Wroughton, 1912	Short simple ear	Short simple flat tragus	Broad muzzle nose	Concealed eyes with head furs
<i>Pipistrellus Kuhlii</i>	Kuhl, 1817 Kuhl, 1819	Long upper edge narrow ears	Long and thin tragus with antitragus present	Short leaf nose	Unconcealed eyes
<i>Pipistrellus Savii</i>	Bonaparte, 1837	Broad round ear	Short tragus narrow on tips	Simple nose	Unconcealed eyes seen
<i>Pipistrellus Scotozous domeri</i>	Dobson, 1875	Small general ear	Round tip half tragus	Muzzle nose	Unconcealed eyes with black furs
<i>Pipistrellus Afinecus</i>	Afshan, 2017	Short black triangular ear	Half moon tragus present on tip of pinna	Simple nose with broad snouts	Eyes up to chin is black in color

**Table 3:** scientific classification of *Pipistrellus Afinecus*

Kingdom	Animalia
Phylum	Chordata
Class	Mammalia
Order	Chiroptera
Sub-order	Microchiroptera
Family	Vespertilionidae
Sub-family	Vespertilioninae
Genus	Pipistrellus
Species	<i>Pipistrellus Afinecus</i> Pakistani Pipistrellus Afshan 2017

### Discussion

The aim of study to explore the new species of microchiroptera as well as their morphology, taxonomy, compression with other species of genus Pipistrellus to proof that collected species is a new exploring species of this genus and possibly the biodiversity of this particular species and some other which inhabiting Hyderabad district. All survey in Hyderabad is revealed there is many species exist which is not in record or not detected on previous time. It is the first attempt in Hyderabad district or province Sindh. T.J Robert was worked on all mammals of Pakistan included order chiroptera and both sub orders of chiroptera “Megachiroptera and Microchiroptera”. After him there is no any attempt shows on this species from any research scholars and wild life conservation as well as any department of zoology.

During the year of 2016 to 2017 study was carried out on Hyderabad district this attempt help to explore the new species of genus Pipistrellus research scholar suggested a name of this species is “*Pipistrellus Afinecus*” or common name is “Pakistani pipistrellus”.

*Pipistrellus Afinecus* has present with key identification organs on the basis of morphological changes. Their nose up to chin is in black color it is external color coating. This coating show that “*Pipistrellus Afinecus*” is belongs to genus pipistrellus. According to (T.J Robert and other biologist) the taxonomy of order chiroptera is depending on their key organs (e.g. ears, eyes, nose, and tragus). It has short triangular ear with moon tragus present on the tip of the pinna. It has unconcealed eyes sharp and clearly seen. Their eyes present downward of its head on black color. Nose is present with broad nostrils or snouts. The body color of pipistrellus *Afinecus* is changed from other species dorsally it has whitish brown or light brown in eyes and nose up to chin black color is present forelimbs, hindlimbs and web tail is also present in curl black color. After the study of many species of genus pipistrellus research scholar easily said that this species is a new exploring species of genus pipistrellus and included it the order microchiroptera.

### Conclusion

Research article is explored the new species of order chiroptera from sub order microchiroptera it is belongs to family Vespertilionidae sub family vespertilioninae and genus pipistrellus on the basis of its morphology, taxonomy and comparative study after study scholar give name of this species is “*Pipistrellus Afinecus*”.

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