The study of feather mites (Astigmata: Xolalgidae) parasitizing Common Myna (Passeriformes: Sturnidae) in association with Feather fungus (Family Chaetomiaceae) from Pakistan.

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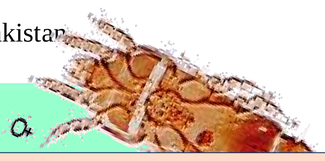


ABSTRACT: Please see the Abstract Book for BSP-Elsevier Spring Meeting 2026.

I N T R O D U C T I O N : Feathers are characterized with a complex micro-ecosystem that supports varied communities of arthropods and microorganisms. Feather mites (Astigmata) are permanent ectosymbionts that inhabit the surface of feathers, feeding primarily on preen gland oils, organic debris, and fungal spores. Genus ***Leptosphyra*** Hull,1934 belongs to family Xolalgidae, is a unique mite in its morphology. Initially the genus was introduced under *Analges* by Robin & Megnin, 1877. Presently it was recovered from the Common Myna, *Acridotheres tristis* which is a widespread passerine bird in Pakistan, but there is no information available regarding its plumage associated microfauna and microflora. As living in human habitations, this bird is a good reservoir of many parasites and pathogens and is potential source of transmission of zoonotic diseases and its life threats (Kapoor & Kaur, 1975; Hidano & Asanuma, 1976; Markula *et al.*, 2009; Rabou, 2022). At present, it is the first study on common myna mites of family Xolalgidae in association with its feather fungus of family Chaetomiaceae in the country.

Fungus: Bird's feathers are known carrier of microorganisms and especially of pathogen fungi which are capable to infect humans and animals (Camin *et al.*, 1998; Anbu *et al.*, 2004). Many mites feed on fungus and depends on fungi for the nutrients, and fungi benefit from them with regard to spore dispersal habitat provision, or nutrient resources. Keratophilic fungi on avian feathers have been described mostly in terrestrial species and cause a sever damage to feathers. Mites cause keratinocitis, dermatitis, eczema disease, feather loss, French moults etc. (Kanchana and Mesta, 2013; Abdel-Azeem, 2020; Kumawat *et al.*, 2020). Previous research has found relationships between environmental fungal exposures and Human health effects, that can be found in all parts of the world. In Pakistan, it is the first study undertaken to find out the feather associated fungi on birds that harbor feather mites.

M E T H O D O L O G Y : A total of **56 birds of Common Myna,** ***Acridotheres tristis*** were captured from different parts of Sindh province; **43 birds** were infested with more **than 500 specimens of Xolalgid** mites were recovered. In the present study, the feather mites recovered were identified based on morpho-taxonomy. The male and female specimens were mounted permanently in Hoyer's Medium. A small piece of Myna's feather was kept in SDA medium for its fungus culture in standard protocol. The fungus species was identified by morpho-taxonomy using temporary mount in Cotton Lectophenol, also by molecular characterization using the gene ITS1, ITS2.

Collection of birds → Collection of mites and affected feather → Preparation of permanent slides → Photography and Illustration → Identification of mites species

Collection of Affected feathers → Preparation of fungus growth medium (SDA) → Inoculation of feather for growth of fungus → Temporary mounting of fungus → Pure Culture of fungus for molecular → Identification of fungus

R E S U L T S

Taxonomy of Mites: Arachnida: Acari: Sarcoptiformes: Astigmata: Analgoidea: Xolalgidae: Ingarssinae: *Leptosphyra* Hull, 1934.

Taxonomy of Fungus: Ascomycota: Pezizomycotina: Sordariomycetes: Sordarialea: Chaetomiaceae: *Pseudothielavia*

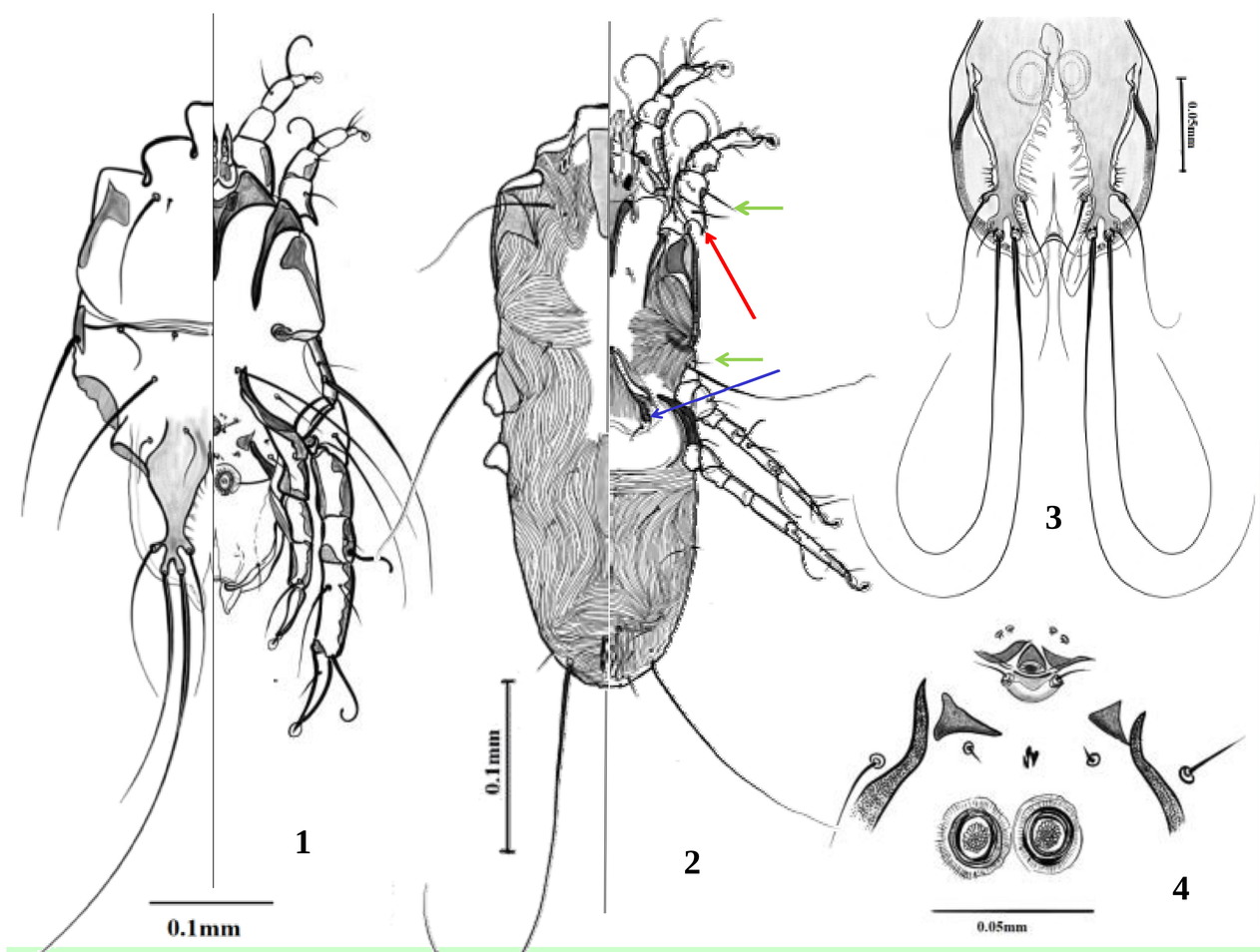
Material Examined: 43♂, 53♀; *Acridotheres tristis* L.; 25-iv-2024, 20-v-2025; Locality: Jamshoro-Hyderabad, Sindh, Pakistan. Lodged at APRLMP-Department of Zoology, University of Sindh, Jamshoro. Pakistan.

Morphology of Mite: The mite species identified as ***Leptosphyra sp.*** The species is very much closely related to *L. centropoda* [Syn.: *Analges centropodus* Robin & Megnin, 1877: 518].

Size: Male 0.389x0.18mm; Female 0.38x0.12mm.

Major Characteristics: Gnathosoma subcapitulate; reticulations present on propodosoma of male and idiosoma of female (Figure 1-2); epimere I fused, Y-shaped; leg II bears a well developed retrograde antiaxial apophyses (red arrow); male leg IV hypertrophied; seta *kTIII* and seta *c3* in female setiform (green arrows); male opisthosoma very complex (Figure 3); heavily sclerotized genital discs around aedeagus (Figure 4); female opisthosoma and vulva with microtrichial striation (blue arrow).

Status: First record of feather mites of the genus *Leptosphyra* from Common Myna from Sindh, Pakistan with New Locality and New host record.



Material studied: Isolated from Remiges feathers of *Acridotheres tristis* L.; Site of infection-Feathers; Location-Sukkar (27.721841, 68.833649); Collector-S. Siyal, S. Khaskheli; Fungal Culture-SDA medium; stored at PPPPL, Institute of Plant Sciences, University of Sindh, Jamshoro. Pakistan. For molecular biology: Genes 8S RNA, ITS1 and ITS2 were analyzed, bp: 585; Accession No. PQ637374. deposited at NCBI/GB (X7UVD45A016).

Morphology of Fungus: The fungus species was identified morphological as a species of the genus *Pseudothielavia;* confirmed through molecular biology as ***Pseudothielavia arxii* (Stchigel and Guarro)**. **Colony:** The colony normally grows flooded, sphere-shaped, non-ostiolate cleistothecia.

Size: Typically 60-200µm diameter (Figures 5A-B).

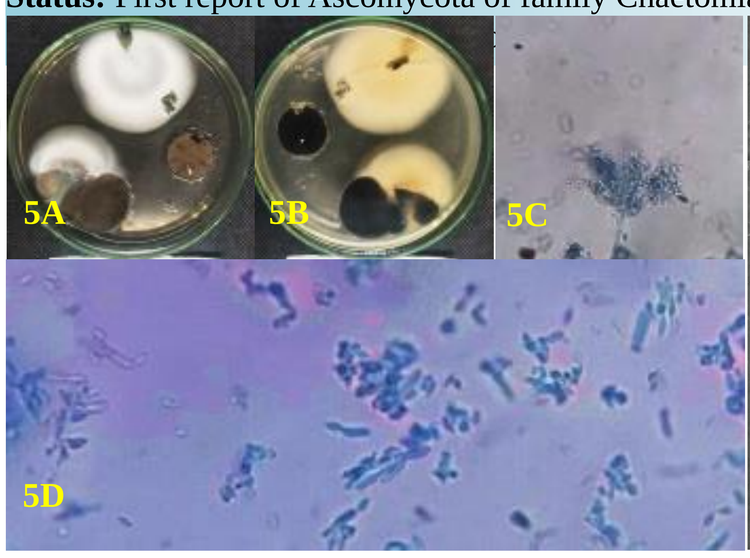
Description: Walls composed of thin, pseudoparenchymatous texture epidermoidea, smooth and non-bristly; asci evanescent (collapse upon maturity), pyriform to ellipsoidal (Figure 5C).

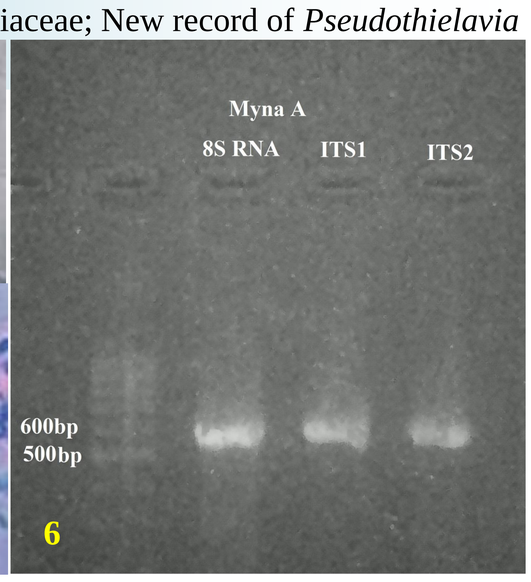
Spores: It produces characteristic dark-cleistothecia. Ascospores are unicellular, ellipsoidal, brown-dark green with a single germ pore at one end (Figure 5D).

Remarks: This species is a thermotolerant mesophilic fungus; grows moderately at high temperature, adapts well to acidic soil with various metabolic capabilities boosting its economic utility. The genus *Pseudothielavia* was first legitimately recognized by Wang and Houbraken (2019).

Molecular Analysis: *Pseudothielavia arxii* isolate MYNA-A small subunit ribosomal RNA gene, partial sequence; internal transcribed spacer 1, 5.8S ribosomal RNA gene, and internal transcribed spacer 2, complete sequence; and large subunit ribosomal RNA gene, partial sequence (Figure 6); Authors: Ujjan,A., Naz,S. and Khaskheli,S.

Status: First report of Ascomycota of family Chaetomiaceae; New record of *Pseudothielavia*





Figures 1-4. *Leptosphyra* sp. 1. Male dorsal and ventral habitus; 2. Female dorsal and ventral habitus; 3. Male opisthosoma enlarged; 4. Male aedeagus and genital discs enlarged.
Figure 5. *Pseudotheilavia arxii.* A. Culture obverse; B. Culture reverse; C. Colony in part; D. Ascospores.
Figure 6. DNA/RNA absorbance in Electrophoresis Gel process at Base pairs 1-585 of the genes 8S RNA, ITS1, and ITS2 for the fungal species determination.

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