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NEW RECORDS OF COPROPHILOUS FUNGI FROM TURKHAM, NORTH PAKISTAN

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Sixteen genera and 24 species of Ascomycetous fungi are reported from Turkham on goat dung substrate. These fungi have never been reported earlier from this region. The species reported in this paper include: *Ascobolus immersus* Pers.; *Ascodesmis porcina* Seaver, *Coprotus granuliformis* (Cr. & Cr.) Kimbrough, *Chaetomium spirale* Zopf, *Chaetomium globosum* Kunze Fr., *Delitschia marchalii* Berl. and Vogl., *Kernia nitida* (Sacc.) Nieuwland, *Lophotrichus bartlettii* (Masse & Salmon) Mollach & Cain, *Podospora prethopodalis* Cain, *Sordaria fimicola* (Rob.) Ces. and de Not., *Saccobolus versicolor* (Karst.) Karst. *Sporormia fimetaria* De Not., *Sporormiella australis* (Speg.) Ahmed and Cain, *Sporormiella dakotensis* (Griff.) Ahmed and Cain, *Sporormiella minima* (Auersw.) Ahmed and Cain, *Sporormiella capybara* (Speg.) Ahmed and Cain, *Sporormiella hexamera* Ahmed et al. *Sporormiella tetramera* Ahmed and Cain, *Sporormiella inaequalis* Ahmed and Asad, *Sporormiella intermedia* (Auersw.) Ahmed and Cain, *Thielavia variospora* Cain, *Tripterospora erostrata* (Griff.) Cain, *Zopfiella karachiensis* (Ahmed & Asad) Guarro and *Zygopleurage multicaudata* Mirza.

Key words: Coprophilous fungi, Turkham, Pakistan.

Introduction

Turkham is a border transit area between Pakistan and Afghanistan where animals, mainly sheep and goat frequently cross the border. Except for *Sporormiella hexamera* reported by Ahmed et al (1985) no other fungi have been reported from Turkham and thus, it was considered worthwhile to undertake detailed investigations. For this purpose, dung samples were collected from different mounds located in the Turkham border region. As a result of our studies 24 species belonging to 16 genera of Ascomycetes are reported on goat dung. None of these fungi have been reported previously from this region. While working on the Turkham material it was observed that the dung collection were generally rich in fungal material.

Materials and Methods

A total of 40 dung samples were collected from different localities of Turkham, mainly near the main gate. These samples were kept in moist chambers at room temperature, as described in an earlier paper by Ahmed and Asad (1967) and examined frequently for a period of one to two months. The fungi mentioned in this paper rarely grow on any of the media and generally do not form fruiting bodies on such media. In most cases, therefore, microscopic examinations were carried out using living material, present on the dung. The observations were based on lactophenol preparations. However, the

measurements were taken in water mounts. Dried specimens of all species included in this paper have been deposited in the Mycological Herbarium of Pakistan Council of Scientific and Industrial Research Laboratories Complex, Karachi. The Herbarium Numbers of the best selected specimen is mentioned with each species. A broad distribution of the reported species from the main countries of Europe, North America, Africa and Asia has also been included.

List of Ascomycetes

1. *Ascobolus immersus* Pers. (Ahmad 1978) On goat dung, Turkham 1982, No. 439, S I Ahmed and A Masood. Egypt, India, Indonesia, Japan, Pakistan, UK and USA.
2. *Ascodesmis porcina* Seaver (Ahmad 1978) On goat dung, Turkham 1982, No. 438, S I Ahmed and A Masood. Egypt, India, Japan, Malaysia, UK and USA.
3. *Coprotus granuliformis* (Cr. & Cr.) Kimbrough (Ahmad 1978) On goat dung, Turkham 1982, No. 440. S I Ahmed and A Masood. Canada, India, Japan, Malaysia, Pakistan, UK and USA.
4. *Chaetomium spirale* Zopf. (Cain 1961). On goat dung, Turkham 1982, No. 443, S I Ahmed and A Masood. Canada, Egypt, India, Indonesia, Japan, Malaysia, Pakistan, UK and USA.
5. *Chaetomium globosum* Kunze (Cain 1961). On goat dung, Turkham 1982, No. 442, S I Ahmed and

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- A. Masood. China, India, Indonesia, Japan, Malaysia, UK and USA.
6. *Delitschia marchalii* Berl. & Vogl (Luck-Allen and Cain 1975). On goat dung, Turkham 1982, No. 444, S I Ahmed and A Masood, Canada, China, Egypt, India, Japan, Malaysia, Pakistan, UK and USA.
 7. *Kernia nitida* (Sacc.) Nieuwland (Malloch & Cain 1971; Seth 1968). On goat dung, Turkham 1982, No. 445, S I Ahmed and A Masood. Canada, India, Pakistan, UK and USA.
 8. *Lophotrichus bartlettii* (Masse & Salmon) Mollach & Cain (Ahmad 1978). On goat dung, Turkham 1982, No. 446, S I Ahmed and A Masood. Canada, India, Japan, Pakistan, UK and USA.
 9. *Podospora prethopodalis* Cain (Ahmad and Masood 1993). On goat dung, Turkham 1982, No.447, S I Ahmed and A Masood, Canada, China, India, Indonesia, Malaysia, Pakistan, UK and USA.
 10. *Sordaria fimicola* (Rob.) Ces. and de Not. (Khan and Krug 1989). On goat dung, Turkham 1982, No.460, S I Ahmed and A Masood. Canada, China, France, India, Japan, UK and USA.
 11. *Saccobolus versicolor* (Karst.) Karst (Ahmad 1978). On goat dung, Turkham 1982, No. 448, S I Ahmed and A Masood. Canada, China, France, Germany, India, Indonesia, UK and USA.
 12. *Sporormia fimetaria* De Not. (Ahmad 1978). On goat dung, Turkham 1982, No. 456, S I Ahmed and A Masood. Canada, France, Germany, India, Pakistan, UK and USA.
 13. *Sporormiella dakotensis* (Griff.) Ahmed and Cain (Ahmad 1978). On goat dung, Turkham 1982, No. 451, S I Ahmed and A Masood. Canada, China, France, India, Japan, Pakistan, UK and USA.
 14. *Sporormiella australis* (Speg.) Ahmed and Cain (Ahmad 1978). On goat dung, Turkham 1982, No. 449, S I Ahmed and A Masood. Canada, India, Germany, Japan, Pakistan, UK and USA.
 15. *Sporormiella capybarae* (Speg.) Ahmed and Cain (Ahmad 1978). On goat dung, Turkham 1982, No.450, S I Ahmed and A Masood. Canada, China, France, Germany, UK and USA.
 16. *Sporormiella minima* (Auersw.) Ahmed and Cain (Furuya and Udagawa 1972). On goat dung, Turkham 1982, No. 455, S I Ahmed and A Masood. Canada, France, Germany, India, Indonesia, Pakistan, UK and USA.
 17. *Sporormiella hexamera* Ahmed *et al* (Ahmad *et al* 1985). On goat dung, Turkham 1982, No. 423, S I Ahmed and A Masood. Pakistan.
 18. *Sporormiella tetramera* Ahmed and Cain (Ahmad 1978). On goat dung, Turkham 1982, No.454, S I Ahmed and A Masood. Bangladesh, Canada, China, India, Japan, Malaysia, Pakistan, UK and USA.
 19. *Sporormiella inaequalis* Ahmed and Asad (Ahmad 1978). On goat dung, Turkham 1982, No.462, S I Ahmed and A Masood. Pakistan.
 20. *Sporormiella intermedia* (Auersw.) Ahmed and Cain (Ahmad 1978). On goat dung, Turkham 1982, No.452, S I Ahmed and A Masood. Bangladesh, Canada, France, India, Indonesia, Japan, Pakistan, UK and USA.
 21. *Thielavia variospora* Cain (Cain 1961). On goat dung, Turkham 1982, No.458, S I Ahmed and A Masood. Canada, France, India, Japan, Pakistan, UK and USA.
 22. *Tripterespora erostrata* (Griff.) Cain (Ahmad 1978). On goat dung, Turkham 1982, No. 458, S I Ahmed and A Masood. Canada, France, Germany, India, Japan, UK and USA.
 23. *Zopfiella karachiensis* (Ahmed and Asad) Guarro (Ahmad and Asad 1967). On goat dung, Turkham 1982, No. 457, S I Ahmed and A Masood. Pakistan.
 24. *Zygopleurage multicaudata* Mirza (Ahmad 1978). On goat dung, Turkham, 1982, No.461, S I Ahmed and A Masood. Pakistan.

Results

On thorough examination of the collected material, it was discovered that the Turkham region is very rich in Coprophilous fungi. Besides ascomycetes, a large number of Deuteromycetes were also noticed. Basidiomycetes may also be present.

Turkham is almost an unexploited area with minimum human influence. Since there is sufficient rain, the fungi grow year after year on the same dung without disturbance and thus, the substrate ultimately become heavily loaded with the fruiting bodies of different fungi, mainly ascomycetes.

As a result of our studies 16 genera and 24 species of Ascomycetes are reported on goat dung from Turkham. These fungi have never been reported earlier from this region.

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