This issue of *Mycological Research News* features: Cause of the Irish potato famine finally identified; A lichen theme; Other papers in this issue; and Pathogen introduction as a collateral effect of military activity.

The fast-tracked lead paper in this part reports the identity of the *Phytophthora infestans* halpotype responsible for the Irish potato famine in the 1840s.

Seven papers are collected together to make this a Lichen Theme issue. These address mating systems in *Xanthoria*; secondary compound production in culture in *Ramalina* spp.; the molecular phylogeny of *Physconia* spp. and the *Lecanora rupicola* group; molecular, morphological and ecological variation and systematics in marine *Collemopsis* spp.; a revision of non-yellow *Rhizocarpon* spp. in Nordic countries; and new corticolous *Trichothelium* spp.

Other papers show that the generic name *Verticillium* has been misapplied and take action to maintain its current use; examine the survival of chytrid spores in stressful soils; and compare the seasonality of a *Laboulbenia* and its beetle host.

The following new scientific names are introduced in this part: *Trichothelium angustisporum*, *T. caudatum*, and *T. kalbii* spp. nov.; *Acrostalagmus luteo-albus* (syn. *Sporotrichum luteo-album*), *Collemopsis foveolatum* (syn. *Arthopyrenia foveolata*), and *C. ostrearum* (syn. *Lecanactis ostrearum*) combs. nov.; and *Lecanora rouxii* (syn. *Lepraria flavescens*) nom. nov.

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**CAUSE OF THE IRISH POTATO FAMINE FINALLY IDENTIFIED**

In *Mycological Research News* (*Mycological Research* 105 (9): 1026, September 2001) we already drew attention to the remarkable progress made in the determination of the mtDNA haplotype(s) responsible for the Irish Potato famine of 1845–47 through the recovery of DNA from specimens collected at the time. Here we report more detailed studies by the same research group at North Carolina State University, led by Jean Beagle Ristaino (pp. 471–479) which indicate that the causal agent was the Ia haplotype which seems to have originated in the Andes, rather than the Ib haplotype as had previously been suspected which is thought to have its origins in Mexico. The Ib haplotype appears to have entered Europe in the early 20th century from Bolivia and Ecuador. A subsequent item in this column (pp. 468–470) provides evidence of the introduction of a particular genotype of another pathogen, *Heterobasidion annosum*, into Europe during World War II. The introduction of pathogens at the strain as well as the species level is thus a matter for on-going concern requiring increased vigilance by plant health inspectorates.

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**A LICHEN THEME**

This issue presents a series of seven papers on lichen-forming fungi, reflecting both new approaches and more traditional systematic work. *Mycological Research* is pleased to present this theme issue in support of the International Association for Lichenology’s Fifth Symposium (IAL 5) to be held in Tartu, Estonia, on 16–21 August 2004 (http://www.ut.ee/ial5, e-mail: ial5@ut.ee).

First, elegant studies on the genetic variability of isolates derived from single ascospores of six species of *Xanthoria* by RAPD-PCR, suggest that *X. parietina* is homothallic while the other five species studied are heterothallic (pp. 480–488). Previous studies have shown the the secondary metabolites expressed by the fungal partners of lichens can vary in pure culture as compared to the intact lichen thallus. *Ramalina peruviana* has been found to form sekikaiac acid in culture as it does in the intact lichen, but not associated ‘satellite’ compounds, while atranorin which was not
detected in the lichen was found in the cultures (pp. 489–497).

Three papers utilize molecular phylogenetic approaches to systematics. Traditional groupings and most species of Physconia are confirmed as distinct, although doubt is shed on the monophyly of two species pairs (pp. 498–505). The Lecanora rupicola group is shown to be distinct from Lecanora s. str., with the species containing sordidone as well as having pruinose apothecial discs (pp. 506–514). ITS data is used in a revision of the marine Collemopsisidium species in north-west Europe, along with statistical analyses of morphological and habitat variables, leading to the recognition of five species (pp. 515–532).

A critical revision of the non-yellow species of Rhizocarpon with hyaline muriform ascospores in the Nordic countries is presented; 16 species are accepted and keyed, along with maps, descriptions, synonyms, spore drawings and habit photographs (pp. 533–570). Finally, a survey of Trichothelium species on bark in the neotropics revealed three new species, bringing the known number to five (pp. 571–575).

The increased inclusion of lichenological papers in Mycological Research in recent years reflects the continuing integration of lichenologists into the broader mycological community. However, now that The Lichenologist, has a new publisher (Cambridge University Press) and is expected to provide an improved service, Mycological Research will in future give priority to lichen papers which will also be of interest to a wider mycological audience.

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OTHER PAPERS IN THIS ISSUE

In addition to the papers and theme highlighted above, this issue includes molecular evidence that the original type species of Verticillium is not related to the plant pathogenic species of the genus (pp. 576–582). It is suggested that the generic name be conserved with V. dahliae as the type to preserve current usage, the original type species now being placed in Acrostalagmus. Experimental studies show that a range of chytrid species are able to survive drought and high temperatures in nature, the sporangia shrinking, but rapidly become turgid again on rehydration (pp. 583–589). The problem of fungal infection in seasonal insect hosts is examined in the case of Laboulbenia phaeo- xanthae on the beetle Phaeoxantha aequinocitialis, infestation being less when the host was most abundant (pp. 590–594).

PATHOGEN INTRODUCTION AS A COLLATERAL EFFECT OF MILITARY ACTIVITY

The introduction of exotic tree diseases has occurred many times over the past 150 years (Wingfield et al. 2001). The most common pathways for introduction of pathogens are movement of infected planting stock (Milgroom et al. 1996, Coetzee et al. 2001) or infested wood (Braasier 2001). These pathways are well understood and monitored by regulatory agencies. Less understood pathways, however, exist for the introduction of exotic pathogens.

Heterobasidion species are important root pathogens with circumboreal distributions. H. annosum was found to be consistently associated with mortality of stone pine (Pinus pinea) in the forest of the Presidential Estate of Castelporziano, near Rome (Italy). Several pure cultures of the pathogen were obtained from fertile fruiting bodies, DNAs were extracted, and PCR amplification using H. annosum-specific primers showed the presence of a mitochondrial insertion reported from North America, but known to be absent in Europe (Gonthier et al. 2001). This unusual finding prompted us to sequence portions of the insertion and of three additional loci from seven Castelporziano (vouchers in MUT, accession nos. 3555-61) and 97 Heterobasidion individuals of worldwide distribution. Maximum parsimony analysis of the nuclear glyceraldehyde 3-phosphate dehydrogenase was performed using PAUP (Swofford 1998), with gaps and insertions counted as single characters. This analysis differentiated North American from European populations with a bootstrap value of 100%, and showed that the Castelporziano individuals always clustered within H. annosum populations infecting North American pines. Additional analyses of the nuclear elongation factor 1-a, the mitochondrial ATPase subunit 6, and of the insertion in the mitochondrial ribosomal operon, never before reported from Europe, all clustered the Castelporziano individuals with H. annosum populations from eastern North America (Fig. 1). Inferences for this study were made from analyses of a total of 2236 base pairs, including 127 parsimony informative characters, from four unlinked loci. Bootstrap values were calculated using the Fast Step algorithm in PAUP for 1000 replicates. Trees were constructed using three closely related taxa as outgroups.

The data support the hypothesis that the Heterobasidion population at Castelporziano originated
from eastern North America. Native *Heterobasidion* populations rely on sexual reproduction and are comprised of several different genotypes (Chase & Ullrich 1983, Korhonen & Stenlid 1998). Individuals from Castelporziano were all different genotypes based on microsatellite fingerprinting and on somatic self-compatibility tests. These findings suggest that this introduced population has become successfully
established in the Castelporziano woodlands. The exotic disease is not widespread outside the Presidential Estate, and its further spread could be limited by a disease mitigation/eradication strategy.

The Estate is not a park but a reserve covered by woodlands; it has been closed to the public for centuries, and is comprised of an exclusively native Italian flora with the exception of a few Eucalyptus trees (Manes et al. 1997). The question remains: how was *Heterobasidion* introduced from North America? Regiments of the 5th US Army occupied the Estate grounds for several weeks during World War II (Cole 2003). We suggest that the introduction of this exotic population is linked to transport crates, pallets or other military equipment made of untreated lumber from infected trees. The short-range spread of *Heterobasidion* spp. via infected wood posts has been previously documented (Stenlid & Redfern 1998), but this fungus is generally thought as an unlikely exotic pathogen because of the lack of resting propagules, the short life span of its airborne basidiospores, and its inability to freely grow in the soil.

Our findings are noteworthy not only because they indicate fungi such as *Heterobasidion* may become exotic introductions, but also because they provide new information regarding the poorly studied collateral effects of military operations on natural ecosystems. As in the case of Castelporziano, it may take decades for the effects of introductions to become visible; the time lag between introduction of the disease agent and the development of visible disease symptoms, underlines the urgency to monitor all potential introduction routes.

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