tion methods were tested to identify a reliable method for the extraction of DNA from mycelium of *P. mimosae-pigrae*. Fungal DNA was successfully extracted (Drenth & Govers, 1994). The primers ITS5 (White *et al*., 1990) and P3 (Kusaba & Tsuge, 1995) were used to amplify the nuclear rDNA region containing the two internal transcribed spacers (ITS1 and ITS2) and the 5.8S rRNA of the *P. mimosae-pigrae* isolates in the polymerase chain reaction (PCR) assay. The PCR was performed in 50 µl reactions. Three to five µ of the PCR assay was then subjected to preparative electrophoresis in 2% agarose gels. The amplification yielded a single visible DNA product. Restriction Fragment Length Polymorphism (RFLP) analysis was used to distinguish the different isolates amplified in the PCR assay. The isolates gave different patterns when the PCR product was digested with the restriction enzyme *Mse I*. In order to further analyse differences between isolates, the ribosomal region amplified in the PCR is being sequenced. Nursery trials have commenced to compare the morphology and germination potential of the isolates and to determine whether these biological characteristics can be linked to genetic markers detected at the molecular level.

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**Post-Release Spread of Musk Thistle Rust Monitored from Virginia to California Using DNA Sequence Information**

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The rust pathogen *Puccinia carduorum*, originally collected in Turkey in 1978, was studied in Virginia for control of musk thistle (*Carduus thoermeri*) in a series of field experiments from 1987-90. The pathogen has been spreading by natural dispersal mechanisms across the U.S. on musk thistle since the studies. This spread had previously been confirmed as far west as Wyoming, as determined by DNA sequence analysis of ribosomal Internal Transcribed Spacer 2 (ITS2) DNA sequences from *P. carduorum* urediniospore samples. A region of sequence identity in the ITS2 of *P. carduorum* permits us to distinguish the pathogen from a morphologically similar strain of *P. carduorum* which is indigenous to California, but only pathogenic on the closely related slenderflower thistle (*C. tenuiflorus*). Teliospores of *P. carduorum* collected from musk thistle at a site near Mt. Shasta, California, in 1998 were found to contain the same ITS2 sequence as that from the foreign isolate originally studied in Virginia, confirming the spread of the pathogen across the entire U.S.