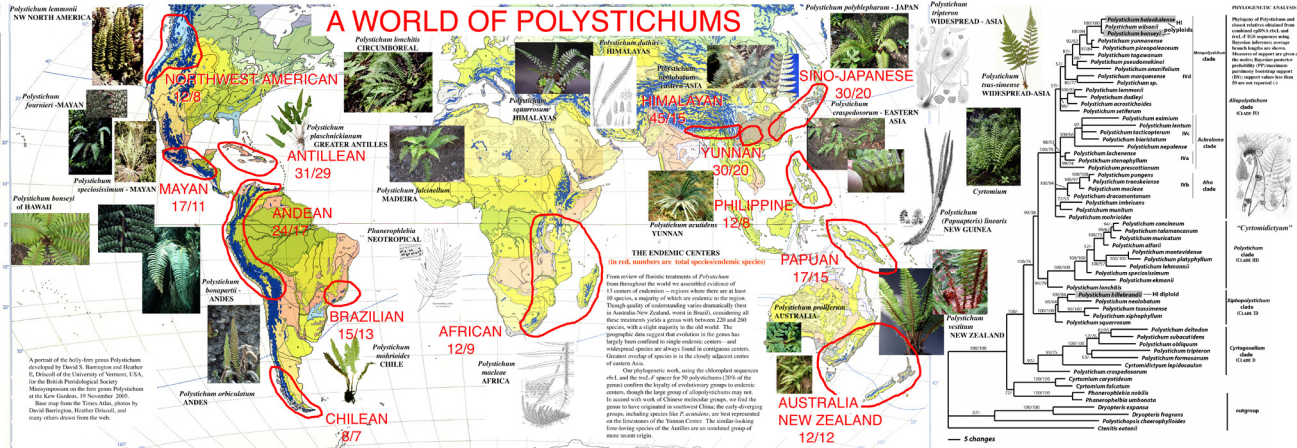


# A WORLD OF POLYSTICHUMS

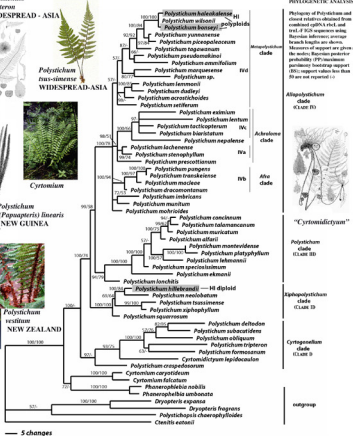


## THE ENDEMIC CENTERS

(in red, numbers are total species/endemic species)

From review of floristic treatments of *Polystichum* from throughout the world we assembled evidence of 13 centers of endemism -- regions where there are at least 10 species, a majority of which are endemic to the region. Though quality of understanding varies domestically (best in Australia-New Zealand, worst in Brazil), considering all these treatments yields a genus with between 220 and 250 species, with a slight majority in the old world. The geographic data suggest that evolution in the genus has largely been confined to single endemic centers -- and widespread species are always found in contiguous centers. Greatest overlap of species is in the closely adjacent centers of eastern Asia.

Our phylogenetic work, using the chloroplast sequences *rbcL* and the *trnL-F* spacer for 50 *Polystichum*s (20% of the genus) confirm the quality of evolutionary groups in endemic centers, though the large group of allopolystichums may not. In accord with work of Chinese molecular groups, we find the genus to have originated in southwest China, the early diverging groups, including species like *P. acutidens*, are best represented on the limestone of the Yunnan Center. The similar-looking fern-loving species of the Antilles are an unrelated group of more recent origin.



A portrait of the holly-fern genus *Polystichum* developed by David S. Barrington and Heather E. Driscoll of the University of Vermont, USA, for the British Peridological Society Minisymposium on the fern genus *Polystichum* at the Kew Gardens, 19 November 2005. Base map from the Times Atlas, photos by David Barrington, Heather Driscoll, and many others drawn from the web.