

In March, our featured speaker was Philip Rundel, Director of the Mildred E. Mathias Botanical Garden at UCLA, and a Distinguished Professor of Biology in the Department of Ecology and Evolutionary Biology. Professor Rundel's presentation drew upon his over 30 years of teaching and field experience, looking at the five global Mediterranean climate regions from a floral diversity perspective.

Rundel began by describing what constitutes a Mediterranean climate region, and how these factors create hotspots of biodiversity. The zones located at latitudes 30° - 40° north and south of the equator are characterized by dry summer and wet winter seasons. These mediterranean-type ecosystems (MTEs), are able to support a great variety of plant life, generally comprised of shrublands, woodlands and sclerophyll forests, that share commonalities of leaf shape, size, and texture. The focus of Rundel's presentation was on the diversity of plant life within these regions and its adaptability for use in Southern California.



He briefly talked about the California Floristic Province, which is comprised of over 4,700 plant species. Dominant plant communities with Mediterranean characteristics are oak woodlands, coniferous forests, chaparral and sage scrub. Many plants have also evolved with adaptations for the regular occurrence of fire in the ecosystem.

By contrast, similar communities in the Mediterranean Basin consist primarily of maquis and garrique scrub, coniferous forests, and very few remaining woodlands. With the largest land area of the MTEs, and over 25,000 species, many plants commonly used in Southern California landscaping originate in this area, including Italian cypress, lavender, rosemary, olive trees and stone pines.

Rundel explained that both South Africa and Southwest Australia are the most ecologically stable of the five regions, being the oldest in geological age. Yet differences in topography, fire cycles and soils have led to the evolution of unique plant communities in these two regions.

He went on to describe the Cape Floristic Region of South Africa, and encouraged visiting the Kirstenbosch National Botanical Garden in Cape Town to see examples of the

many indigenous regional plants, including leucadendron and a vast collection of proteas. South Africa is the smallest in area of the five regions, but is home to over 9,000 species in its Afromontane forests, renosterveld grasslands and dominant fynbos vegetation. Within the fynbos, three families do especially well in Southern California: the Proteaceae, Restionaceae and the Ericaceae, with the latter having over 680 endemic subspecies in South Africa.

Next, Rundel talked about Southwest Australia, with its mallee heathlands, kwongan shrubland, banksia woodlands and eucalyptus forests. Topography is low, but vegetation height of the more than 8,000 species varies between being either very tall or very short. Plants have evolved to survive in extremely depleted sandy soils, as the land has weathered for a long period of time. Centers of richness and endemism are in areas of indeterminate rainfall, making many of these plants adaptable for Southern California gardens, including members of the Proteaceae, Myrtaceae and Fabaceae families, as well as certain Australian orchids and geophytes such as gastrolobium, macropidia fuliginosa and haemodoraceae.

The final region Rundel covered was that of coastal Chile, with its matorral vegetation, sclerophyll woodlands, evergreen forests and the grassy espinal. Over 3,900 species are found in this region which is characterized by weather that has no fire seasons, unlike the other four MTEs. Succulents are widespread due to the absence of fire, and are among the many Chilean plants which do well in Southern California. Other imports include: Lobelia, Puya, Escallonia, and Alstromeria. Rundel postulated that due to the geographic commonalities shared by Chile and California (coastal ranges and inland valleys), this region could potentially be a source for more landscaping plant materials in the future.

In conclusion, while these five global regions have Mediterranean climate similarities, it is their support of rich and varied plant life that



makes them hotspots of biodiversity. Typically, they also share low extinction rates, exhibit niche conservation, and (other than Chile), have fire adaptability. And while these MTEs account for only 2.25% of the world's land area, they support 16% of all plant species. However,

Rundel pointed out that all of the regions are continuously endangered due to human population growth, with its associated threats of habitat loss, land degradation, invasive alien plants and conversion of land for urbanization.

✎ Sabine Steinmetz

## Editorial

### RAMIFICATIONS OF PLANT SMUGGLING

At a recent SCHS meeting a person drew a round of applause for proudly displaying smuggled leaves and fruit. Apparently folks don't realize the catastrophic consequences for California agriculture and native plants that plant smuggling can lead to. California experiences invasions by exotic pests at least once every 3 months. Most arrive on poorly inspected or smuggled plant matter.

Consider 2 of our more recent unwanted visitors:

- Asian Citrus Psyllid (ACP), which spreads the deadly citrus greening disease (Huanglongbing) has become established in Southern California. As a result, tens of thousands of acres will have to be helicopter-sprayed with pesticides 3-4 times per year, organic citrus growers will go non-organic and the USDA will spend \$40 million just to slow the bug down until we can find a permanent solution. At this point the only long term solution may be GMO citrus trees. The two detections of Huanglongbing were caused by smuggled curry leaves and a smuggled citrus cutting.

- Polyphagous Shothole Borer (PSHB and KSHB), also referred to as "Treebola". These tiny beetles from Asia and the deadly fungi they carry threaten hundreds of tree species. They've wiped out native willows in the Tijuana river and killed thousands of native oaks, box elder and sycamore trees throughout Southern California. California avocado growers have already spent over \$2 million fighting this pest and Orange County plans to spend the same amount this year just to grind up dead oaks and sycamores.

If you don't want to cause more GMOs, wasted tax dollars and pesticide spraying, and you also don't want to eliminate organic produce and native trees, then please don't even think about smuggling plant matter.

✎ John Schoustra

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