



SF Environment
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Urban Forest Habitat Assessment

MEMO re Street Tree Census Data, Reviewed for Native and Invasive Species

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To: Anne Brask, Jon Swae, Lisa Fisher at SF Planning
From: Peter Brastow, SF Environment

SF Planning delivered to SF Environment data from the recent San Francisco street tree census. The dataset fields include common name, scientific name and the frequency of each species. SFE added three more variables to the spreadsheet - native, invasive and notes – and entered data for each variable for each species as appropriate.

Results

The street tree census found well over 700 species of trees. After removing duplicates and cultivars, the data reveal that 53 species of California natives grow among the street trees of San Francisco. Besides Monterey pine and cypress (see below), coast redwood and Catalina ironwood are the two most frequent California natives. In addition, 12 species are specifically San Francisco natives. Among those SF natives are a couple of shrubs, coffeeberry and coyote brush, but the data also illustrate that the street tree network boasts over 450 coast live oak trees, 63 Toyon and 42 California buckeyes. Finally, 13 California natives are Bay Area natives **that grow in habitats/microclimates that are very close to San Francisco's**. Many of those 13 tree species are riparian, and so it would be interesting to note their status vis-à-vis water availability. Examples are box elder, white alder, big leafed maple, and cottonwoods. There are Bay Area natives in the network besides those 13 that grow in more dissimilar natural habitats/climates, e.g., grey and Coulter pine and California nutmeg.

SFE analyzed the dataset for invasive species, and that information is indicated on the spreadsheet. Only 31 species of trees in the network are considered invasive, though they account for over 25,000 individual trees with only 10 species accounting for over 21,000 invasive trees.¹ All existing categories of invasiveness were considered, per the California Invasive Plant Council.² There are 7 species that are classified as *Moderate* invasiveness by

¹ *Acacia melanoxylon*, *Cordyline australis*, *Cupressus macrocarpa*, *Ligustrum lucidum*, *Maytenus boaria*, *Myoporum laetum*, *Olea europaea*, *Pinus radiata*, *Pittosporum undulatum*, *Prunus cerasifera*.

²References for invasive plants:

Cal-IPC: tree-of-heaven, silver wattle, edible fig, Mexican fan palm, Chinese tallow tree, English holly and myoporum. The *Cal-IPC moderate* category includes well-known invasive weeds such as Italian thistle, poison hemlock, *Ehrharta* grass and yellow oxalis (all of which can be *highly* invasive in San Francisco). The data reveal 11 species that are classified as *Limited*, including most notably blue gum eucalyptus and blackwood acacia, both of which are widely planted throughout the city. Cal-IPC also has a category for *California Invasive*; Monterey pine and Monterey cypress are well represented throughout the city. Monterey cypress, in particular, can be invasive in the fog belt, which should be considered when planting adjacent to natural areas or when landscape plans include an objective of low-growing perennials or pollinator gardens, since M. cypress eventually tend to preclude plants other than *Ehrharta erecta* within their dripline.

Other notable invasives include Mayten, which was a Cal-IPC Red Alert in 2013, and is a species that SF Recreation and Parks has to control in sites like Buena Vista Park where it threatens the coast live oak woodlands.³ Glossy privet is a proposed 2017 addition to the Cal-IPC list, as is Victorian box. Finally, three more Acacia species are considered *High Risk* of becoming Invasive.

Next Steps

Invasive Trees

The current San Francisco Street Tree List includes just the following 6 species that are considered to be invasive at a statewide level by Cal-IPC (see spreadsheet):

Acacia baileyana, **Bailey's acacia**
Cordyline australis, Cabbage palm
Leptospermum laevigatum, Australian tea tree
Olea europaea, Olive
Pittosporum undulatum, Victorian box
Washingtonia robusta, Mexican fan palm

From personal experience, only Victorian box seems to be a species that seeds readily from a planting in San Francisco (similar to privet under the right moisture conditions). Cabbage Palm

<http://cal-ipc.org/paf/>
<http://cal-ipc.org/ip/inventory/pdf/Assessments.pdf>
<http://calipc.org/ip/inventory/pdf/2017ProposedAdditions.pdf>
<http://www.cal-ipc.org/ip/inventory/pdf/Cal-IPCWatchlist.xls>
<http://www.calipc.org/ip/inventory/pdf/2006NativeSpecies.pdf>

³ Red Alerts are announced at each Cal-IPC annual conference.

may have been the species that I discovered growing and spreading aggressively in the Green Roof at 1 South Van Ness. Certainly Australian tea tree tends to completely take over a space given the opportunity, such as in Golden Gate Park. As a tended street tree though, it may not be a problem. In terms of the other three, and in general, the City should be watchful of species with warnings from Cal-IPC. The process of determining invasiveness is a rigorous one, and the uncertainty, chaos and variability of climate change may give potentially invasive species the jolt that they need. Weeds can be dormant for some time, and then quickly become very invasive.

Recommendation 1: Given all of the other choices for street trees, the City should err on the side of caution and stop planting the above four species, replacing them as they die or age with others that are not invasive. The same applies to all other species in the network that have an invasive status, even if they are no longer officially recommended by the City.

Natives

While *Quercus agrifolia*, coast live oak, is indeed native to San Francisco, the 456 coast live oak trees that evidently exist among the street tree network, probably originate across a broad swath of California.⁴ Personal observation of some coast live oaks planted ornamentally shows that they appear in fair to poor health, and this could be due to being from genetic stock from southern California, for example. **The coast live oak is San Francisco's signature native tree species**, and so the City should give it special attention and consideration.

Recommendation 2: Select a sample across the diverse geography of the city to study the stock of coast live oak trees in the street tree network to look for trends or problems. Compare wildlife observations among them. Community-based bio-blitzes could be a tool for collecting this data.

Recommendation 3: Examine at least a sample of all of our local native and regional native tree species in order to understand their health and success in the San Francisco streets compared to each other and to the typical, hardy non-native street trees. Upon gaining results from these investigations, implement the habitat recommendations from the Urban Forest Plan, applying the specific knowledge learned from the census and subsequent studies.

Habitat Assessment

SFE produced two other documents to date that help to create a framework for how to conduct a **habitat assessment of the city's street tree network**. **Now that the census is complete, and we** have the attached additional data to consider, a general wildlife habitat assessment of the census data can inform the proposed community-based wildlife observation program for the urban forest on the Green Connections by setting geographic priorities.

⁴ Significant coast live oak stands are located in the eastern end of Golden Gate Park, in the Presidio, at Lake Merced, on Bayview Hill and on Yerba Buena Island, with more scattered throughout the parks and natural areas.

Recommendation 4: The City should take the next step of hiring a professional urban wildlife ecologist to study the data, study a small sample of the network, develop and implement a methodology for assessing the current and potential habitat value of the street tree network, and then advise the City on how to prioritize gathering future biological data in the urban forest.

Recommendation 5: Cross-check the native trees data with the Green Connections network. Where overlap exists, build on these habitat corridors. Where significant native trees are found outside the network, determine if focus should be put to those areas in addition to Green Connections corridors.