



1442-A Walnut St., #462
Berkeley, CA 94709
(510) 843-3902
fax: (510) 217-3500
www.cal-ipc.org

Board of Directors

Jutta Burger, President
Irvine Ranch Conservancy

Gina Darin, Vice-President
California Dept. of Water Resources

Steve Schoenig, Treasurer
Cal. Dept. of Fish & Wildlife (retired)

Tim Buonaccorsi, Secretary
RECON Environmental

Jason Casanova
Council for Watershed Health

Doug Gibson
San Elijo Lagoon Conservancy

Jason Giessow
Dendra, Inc.

Bill Hoyer
US Navy

Drew Kerr
Invasive Spartina Project

Ed King
Placer County Agricultural Commission

Marla Knight
Klamath National Forest (retired)

Julia Parish
Catalina Island Conservancy

Laura Pavliscak
Tejon Ranch Conservancy

Heather Schneider
Santa Barbara Botanic Garden

Baldeo Singh
Sacramento Conservation Corps

Lynn Sweet
UC Riverside

Juan de Dios Villarino
California State Parks

Student Liaisons

Amanda Swanson, *UC Riverside*
Marina LaForgia, *UC Davis*

[Affiliations for identification only]

March 17, 2017

Ken Pimlott, Chair
California Forest Climate Action Team
Calfire Sacramento Headquarters
1416 9th Street
Box 944246
Sacramento, CA 94244-2460

Director Pimlott,

Thank you for the opportunity to comment on the Draft California Forest Carbon Plan. Strengthening forest resilience to fire and climate change while increasing carbon capture is critical.

Given that the goal of the draft plan is strengthening resilience, we believe that this document should be more specific in addressing challenges related to invasive plants. Policies should address key topics including: preventing new invasive plant introductions through a range of Best Management Practices; establishing sufficient early detection and rapid response capacity; maintaining effective landscape-level programs to contain, control, and eradicate established invasive plant populations; and specifying non-invasive species for urban forestry to prevent unintentional introductions to wildlands. These management activities should be coordinated across private and public lands. These activities are consistent with federal policy (EO 13751) and Forest Service policy (FSM 2900).

Invasive plants impact forest resilience in a variety of ways. Invasive annual grasses such as medusahead and cheatgrass produce uniform fine fuels that increases the likelihood that an ignition source will be able to ignite fuels. Such grasses also carry fire through the spaces between woody vegetation. Invasive shrubs such as French and Scotch broom contain volatile chemicals that are highly flammable and can serve as ladder fuels. After a fire, these plants readily re-sprout as well as germinate from seed, inhibiting regrowth from tree species. Some invasive plants, such as yellow starthistle, are known to consume more groundwater than plants such as annual grasses. This reduces soil moisture for other plants and can increase fire risk (Klinger et al. 2006). Beyond impacts to fire regimes, these invasive plants also degrade wildlife habitat.

Effective fire management depends on strategic invasive plant management to reduce detrimental impacts to fire regimes (Brooks et al. 2004 give an overview of impacts to fire regimes). Fire management must also ensure that fuel reduction activities do not inadvertently introduce and spread invasive plants (Merriam et al. 2006). Lack of attention to prevention and management strategies can result in a counter-productive decrease in forest resilience and failure to sequester carbon at desired rates.

The following areas of the Draft California Forest Carbon Plan should be supplemented with a recognition of invasive plants and their impact so that the direction provided by this plan is as effective as possible at achieving healthy, resilient forests.

Section 2.2.1 Recent Forest Trends: In this section, the plan should describe recent trends in the spread of invasive plants in the forested landscape and how this has contributed to increased fire hazard and changing fire regime (Bossard and Randall, 2007; Klinger et al. 2006).

Section 2.3 Fuel Reduction and Related Treatments: In this section, the plan should describe the challenge of implementing effective fuel reduction treatments without creating habitat vulnerable to invasive species that will impede the achievement of the fuels treatment goals of these projects (Cal-IPC, 2012; Keeley, 2006).

Section 3.2 Expand and Improve Forest Health and Resilience: In this section, the plan should describe how preventing the introduction, establishment, and spread of invasive plants is an important part of the goal of achieving improved forest health and resilience (Bossard and Randall, 2007; Brooks et al. 2004; Zouhar 2005abc).

Section 6.2.2 Climate Impacts on Forest Health: This section should draw from existing work predicting how species ranges may shift under alternative climate change scenarios (Cal-IPC, 2017). Climate change will also impact the suitable range for invasive plants in ways that will affect forests beyond the commonly described shifts in native vegetation. Susceptibility to invasion from a changing climate may also not be readily observable due to the long-lived nature of forests and the relatively long time between disturbance events (or silvicultural or fuels treatments). Due to the uncertainty of changing conditions, efforts to prevent the introduction, establishment, and spread of invasive plants will continue to be important to avoid unintended outcomes that may occur due to either a new invasive plant moving into a region, or changes in climate that makes the region more susceptible (and less resilient) to invasion.

Section 11.2 Research Needs: Forest Restoration and Protection: In this section, the plan should identify the need to better understand how to design and implement fuels and silvicultural treatments that effect invasive plant establishment and spread and how this relates to forest resiliency, fire risk, and the provision of ecosystem services such as water infiltration, soil health, soil carbon, and wildlife habitat.

We urge you to incorporate the important topic of invasive plants into the California Forest Carbon Plan and identify practices to prevent the introduction, establishment, and spread of invasive plants.

Sincerely,



Doug Johnson, Executive Director

References:

Brooks, M. L., C. M. D'Antonio, D. M. Richardson, J. B. Grace, J. E. Keeley, J. M. DiTomaso, R. J. Hobbs, M. Pellant, and D. Pyke. 2004. Effects of invasive alien plants on fire regimes. *BioScience* 54(7): 677 – 688.

Bossard, C. C. and J. M. Randall. 2007. Nonnative Plants of California. Pages 107 – 123 in M. C. Barbour, T. Keeler-Wolf, and A. A. Schoenherr (eds.) *Terrestrial Vegetation of California*. University of California Press, Berkeley.

Cal-IPC [California Invasive Plant Council]. 2012. Preventing the Spread of Invasive Plants: Best Management Practices for Land Managers (3rd ed.). Cal-IPC Publication 2012-03. California Invasive Plant Council, Berkeley, CA. Available at <http://www.cal-ipc.org>.

Cal-IPC [California Invasive Plant Council]. 2017. CalWeedMapper. An online database of invasive plant distributions in California and predictions of suitable habitat under climate change scenarios. Available at <http://calweedmapper.cal-ipc.org>.

E.O. 13751. 2016. Safeguarding the nation from the impacts of invasive species. *Federal Register* 81(236): 88609 – 88614.

FSM 2900. USDA Forest Service. 2011. Forest Service Manual 2900 – Invasive Species Management. Washington, DC.

Keeley, J. E. 2006. Fire management impacts on invasive plants in the Western United States. *Conservation Biology* 20(2): 375 – 384.

Klinger, R. C., M. L. Brooks, and J. M. Randall. 2006. Fire and Invasive Plant Species. Pages 499 – 519 in N. G. Sugihara, J. W. Van Wagtendonk, K. E. Shaffer, J. Fites-Kaufman, and A. E. Thode (eds.) *Fire in California's Ecosystems*. University of California Press, Berkeley.

Merriam, K. E., J. E. Keeley, and J. L. Beyers. 2006. Fuel breaks affect nonnative species abundance in Californian plant communities. *Ecological Applications* 16(2): 515 – 527.

Zouhar, Kris. 2005a. *Cytisus scoparius*, *C. striatus*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: <http://www.fs.fed.us/database/feis/> [2017, March 15].

Zouhar, Kris. 2005b. *Genista monspessulana*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: <http://www.fs.fed.us/database/feis/> [2017, March 15].

Zouhar, Kris. 2005c. *Spartium junceum*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: <http://www.fs.fed.us/database/feis/> [2017, March 15].