Cal-IPC
California Invasive Plant Council

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To: Air Resources Board
From: Doug Johnson, Executive Director
Date: 3/4/2013
Re: Investment of Cap-and-Trade Auction Proceeds

On behalf of the California Invasive Plant Council (Cal-IPC), I am writing to propose the use of cap-and-trade auction proceeds for invasive plant management in California's lands and waters. Invasive plant management can reduce greenhouse gas (GHG) emissions, while also realizing other environmental benefits. State funding for invasive plant management has been cut in recent years, and funding from auction proceeds would help renew these important programs.

Cal-IPC can prioritize and coordinate implementation of invasive plant projects across the state in partnership with Resource Conservation Districts (RCDs), Weed Management Areas (WMAs) and other entities to assure the maximum long-term benefit of expended funds and a long-term benefit. Cal-IPC has outlined an annual need of $20 million to achieve meaningful management at the landscape scale to address the spread of invasive non-native plants in California.

GHG Reduction

Invasive plant management has the potential to reduce GHG emissions in several ways. Protecting water resources is one key way. Some invasive plant species consume substantially more water than the native vegetation they displace. Yellow starthistle (*Centaurea solstitialis*), for instance, uses soil moisture earlier than natives and researchers have estimated that yellow starthistle consumes 15 billion gallons of water in the Sacramento River watershed[1]. A recent impact report examining giant reed (*Arundo donax*) demonstrated water use of 61 billion gallons of water annually in watersheds from Monterey to the Mexican border[2]. Stands of saltcedar (*Tamarix* spp.) occupy nearly every flood plain in the southwestern U.S. and annually consume 320,000 to 490,000 gallons per acre more water than the native vegetation that they replace. The increased water use impacts water supplies for municipalities, farmers, and hydropower generation, an estimated loss of $22-58 million for California each year[3].

This water consumption reduces locally available water supplies for agriculture and municipal use (e.g., drains aquifers), which necessitates water delivery from remote locations. This results in significant GHG emissions through the need to move water from wetter portions of the state to southern California (aqueducts, pumping, etc.). Additionally, water storage facilities must be constructed and maintained resulting in additional GHG emissions.

In addition to excess water consumption, invasive plants can interfere with water supply by impeding conveyance. Aquatic species such as water hyacinth (*Eichhornia crassipes*), Brazilian waterweed (*Egeria densa*), and South American spongeplant (*Limnobium laevigatum*) clog pumps, canals and other water infrastructure. Some riparian species, such as red sesbania (*Sesbania punicea*) and giant reed can greatly increase hydrologic roughness along waterways in addition to changing sediment budgets. These impacts result in higher energy expenditures to move water, as well as energy-intensive maintenance work to keep channels clear. Increased maintenance demand also applies to flood control channels and levees that are infested with invasive plants.

Reducing wildfire frequency and intensity is another way that invasive plant management would reduce GHG emissions. Plants like Scotch broom (*Cytisus scoparius*) in the Sierra, giant reed along the south coast, and cheatgrass (*Bromus tectorum*) in the desert can all impact fire regimes by providing ladder fuels, ignition sources, and biomass[4,5]. Reducing wildfire is a primary motivator for managing these species. This serves to protect carbon sequestered in vegetation by reducing the frequency, scale and intensity of wildfire events.

Lastly, replacing degraded lands dominated by exotic annual grasses and forbs with native shrub and tree species may sequester carbon and reduce atmospheric CO_2 concentrations[6]. For example, the Ridgefield experiment in Western Australia has converted former agricultural land dominated by alien grasses to native-dominated woodland with the goal of providing carbon sequestration in addition to other environmental benefits such as soil erosion control, biotic resistance to invasion, pollination, and biodiversity[7].

Replace Critical Funding

Invasive plant management to protect agriculture and natural resources has a long history as a critical program of the state. In 2010, the Department of Food & Agriculture cut the last $3 million of funding for their weed management program, which had leveraged extensive collaboration across the state through County Agricultural Commissioners and a broad network of other partners (WMAs and RCDs). The work has strong support from a range of stakeholders across California; in 2006, over 100 organizations sent letters to the state legislature in a successful campaign to renew funding for CDFA's WMA program. Funding to replace the most recent cuts has not yet been restored. Discussions are underway with the Department of Fish & Wildlife about developing a complementary program, but there is no funding commitment to date.

The state's Strategic Framework on Invasive Species[8], adopted by Secretaries of six state agencies, makes management of invasive plants a top priority. New decision-support tools like Cal-IPC's online CalWeedMapper[9] (built with federal and state grant funds) enable development of highly effective strategies to stop the spread of invasive plants. This approach includes projections of future suitable ranges for invasive plants as climate change affects temperatures and precipitation patterns.

Cal-IPC Invasive Plant Management Capacity

Cal-IPC works with a broad network of stakeholders across the state to develop effective landscape-level projects to stop the spread of invasive plants. Partners include local, state and federal agencies; water and power utilities; Resource Conservation Districts; land trusts; ranchers, timber operators and other producers; and local watershed groups.

Cal-IPC currently serves as a lead in prioritizing and coordinating implementation of invasive plant projects across the state in partnership with RCDs, WMAs and other entities to assure the maximum long-term benefit of expended funds and a long-term benefit. Cal-IPC has outlined an annual need of $20 million to achieve meaningful management at the landscape scale to address the spread of invasive non-native plants in California. Please give due consideration to applying cap-and-trade auction proceeds to invasive plant management in California's lands and waters that can reduce GHG emissions while also realizing other environmental benefits.

Sincerely,

Doug Johnson
Executive Director

[1]Gerlach, J.D. Jr. 2004. The impacts of serial land-use changes and biological invasions on soil water resources in California, USA. Journal of Arid Environments 57(3): 365-379.

[2]California Invasive Plant Council. 2011. *Arundo donax* Distribution and Impact Report. www.cal-ipc.org/ip/research/arundo/index.php.

[3]Zavaleta E. 2000. The economic value of controlling an invasive shrub. *Ambio* 29:462-467.

[4]Bell, Carl E., Joseph M. Ditomaso, and Matthew L. Brooks. 2009. Invasive plants and wildlfires in Southern California. University of California Division of Agriculture and Natural Resources, Publication 8397.

[5]Keeley JE and TJ Brennan. 2012. Fire-driven alien invasion in a fire-adapted ecosystem. *Oecologia* 169:1043–1052

[6]Scherer-Lorenzen M, Schulze ED, Don A, Schumacher J, Weller E. 2007. Exploring the functional significance of forest diversity: A new long-term experiment with temperate tree species (BIOTREE). *Perspectives in Plant Ecology, Evolution and Systematics* 9: 53-70.

[7]Perring MP, Standish RJ, Hulvey KB, Lach L, Morald TK, Parsons R, Didham RK, Hobbs RJ. 2012. The Ridgefield Multiple Ecosystem Services Experiment: Can restoration of former agricultural land achieve multiple outcomes? *Agriculture, Ecosystems and Environment* doi:10.1016/j.agee.2012.1002.1016.

[8] California Invasive Species Advisory Committee, www.iscc.ca.gov.

[9] http://calweedmapper.calflora.org.