NEWS
from the CENTER FOR INVASIVE PLANT MANAGEMENT

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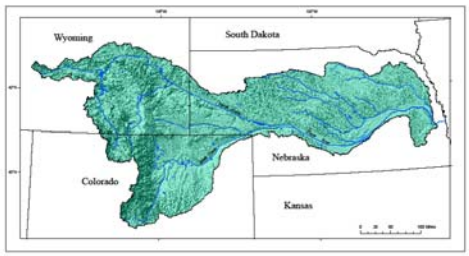
In This Issue

Invasive Weed Management Throughout the 3-State Platte River Basin



The Platte River basin comprises the North and South Platte River drainages and their associated tributaries that span three states: Colorado, Wyoming and Nebraska. This river basin lies at the heart of the United States and the projects and structures built on it provide water for many uses: irrigation, livestock, domestic consumption, recreation, endangered species, power generation, eco-tourism, flood control, wildlife habitat, sediment retention, and pollution abatement. The Platte River has a rich history, serving as a "guide" for the Oregon and Mormon trails as well as a "battle ground" over water rights for all three states. Most of the fights over water rights have cooled down, but a new source of trouble has shown up in this riparian system: invasive weeds. Fortunately, all three states have active programs and projects to address this issue.

CIPM to Coordinate Weeds Across Borders 2010 Conference

The University of Nebraska Water Center, the U.S. Geological Survey, Headwaters Corporation, and Platte River Recovery Implementation Program (PRRIP) hosted the 2009 Platte River Basin Science and Resource Management Symposium October 14-15, 2009, in Kearney, Nebraska. The purpose of the meeting was to provide status updates for the PRRIP, Nebraska's integrated water management plan for the Platte River basin, the Environmental Account for endangered species, and research and applied invasive weed management projects being conducted throughout the basin.

2009 Platte River Symposium and Platte River Recovery Implementation Program

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PRRIP is a partnership that joins the U.S. Department of the Interior and states of Colorado, Wyoming, and Nebraska. It was formed when the governors of the three states and the Secretary of the Interior signed a cooperative agreement on July 1, 1997 to address the needs of threatened and endangered species in the basin. Led by an 11-member Governance Committee and with an estimated (2005) cost of $320 million, the federal government will contribute $157 million while Colorado and Wyoming will jointly contribute $30 million. The balance will come from land and water contributions from Colorado, Wyoming, and Nebraska.

Overall goals of the PRRIP are: improve and maintain migration habitat for whooping cranes and reproductive habitat for the interior least tern and piping plover; test the assumption that managing flows in the Central Platte basin also improves Lower Platte basin pallid sturgeon habitat; increase Central Platte basin stream flows at designated times; reduce target flow shortages by an average of 130,000 to 150,000 acre-feet per year; protect, restore where appropriate, and maintain at least 10,000 acres of habitat between Lexington, NE and Chapman, NE on the Platte River; ensure that new water-related activities are consistent with long-term program goals; and reduce the likelihood of other species being listed und the federal Endangered Species Act. For more information on the PRRIP, visit their website.

Oral presentation topics at the symposium included: endangered species, ground and surface water conflicts, invasive species, farm bill conservation programs, wildlife habitat, habitat restoration, economic and socioeconomic changes in the Platte River basin. Poster presentations on research included these and others: impacts of groundwater pumping, distribution, abundance and use of habitat by Sandhill cranes, riparian water use (ET), ecosystem recovery assessment in restored Platte River wetlands, Phragmites weed management, and cost-effective analysis of invasive vegetation management. Over 180 participants took part in the symposium's tour and presentations.

For more information on the symposium and oral and poster presentations, check out the UNL Water Center website's link to the symposium or contact Lorrie Benson, Assistant Director of the UNL Water Center.

Public Comment Invited

- USDA APHIS proposes to amend the Federal noxious weed regulations by adding Old World climbing fern (*Lygodium microphyllum* (Cavanilles) R. Brown) and maidenhair creeper (*Lygodium flexuosum* (L.) Swartz) to the Federal list of terrestrial noxious weeds. The agency will consider all comments received by December 18, 2009. For additional information click here.

- The U.S. Environmental Protection Agency has proposed guidance for new pesticide labeling to reduce off-target spray and dust drift. When implemented, the new instructions will improve the clarity and consistency of pesticide labels and help prevent harm to the environment or human health from spray drift. Comments are due by January 4, 2010. For background information about spray drift and links to the comment website, click here.

Models and Decision Theory to Guide Surveillance and Eradication Efforts

The following papers discuss some models and theoretical approaches to minimize the cost and maximize the effectiveness of invasive species surveillance and eradication. To implement any of these models, you can obtain the full journal articles or contact the authors for further information.

Streamlining 'search and destroy': cost-effective surveillance for invasive species management
Cindy E. Hauser and Michael A. McCarthy, Ecology Letters 12(7):683-692. 2009.

The authors develop a simple detection and management model for a low-density invasive species distributed across a heterogeneous landscape, where the species has variable probabilities of occurrence and detection as well as variable benefits for detection and eradication. They determine the resource allocation that minimizes expected management costs. For the model, the probability of a species occurring at a given site is first determined from existing information about the species. The probability of detecting the species depends on the surveillance effort, the ease of detection, and the site's terrain. As the surveillance efforts increase, the probability that an invasive species incursion remains undetected declines. Detection of the species is assumed to trigger eradication efforts. The model shows that there is an optimal investment in surveillance, with surveillance only being worthwhile where pi(ciU-ciD) is sufficiently high, where: pi = probability of invader presence, ciU = expected cost of incursion if the invader is not detected, and ciD = expected cost of management when invader is detected. If λi is the surveillance efficacy at the site, then pi(ciU-ciD) must be greater than 1/ λi for cost effectiveness. Otherwise, the surveillance cost overwhelms the expected benefits provided. It is shown that the higher the probability of invasive species occurrence, and the more effective the surveillance method, the more effort should be invested in surveillance.

Optimal eradication: when to stop looking for an invasive plant
Tracey J. Regan, Michael A. McCarthy, Peter W.J. Baxter, F. Dane Panetta, and Hugh P. Possingham. Ecology Letters 9(7):759-766. 2006.

The authors state that managers can never be sure of eradication because of imperfect population detection and seed bank longevity, and that eradication is commonly declared based on setting arbitrary thresholds of 1% or 5% confidence that the species is not present. This paper suggests an economic approach in which one stops looking for a species when the expected costs of looking outweigh the expected benefits of finding a population. The model is based on determining the number of years of absent surveys required to minimize the net expected costs. Because the detection of a species is imperfect, the optimal stopping time for surveys is a trade-off between the cost of continued surveying and the cost of escape and damage if eradication is declared too soon. The basic formulation of the model is NEC = Cs + Ce × p(1-q), where: NEC is the net expected cost, Cs is the cost of the survey, Ce is the expected cost of escape and subsequent damage, p is the probability that the species remains present after the survey and q is the probability of detecting the species if it is present. The authors also develop a more complicated model that takes into consideration the possibility of the invasive species being detected again in future years, using stochastic dynamic programming (SDP). Data from a case study was used to test the models, and it was determined that the simple model was a good approximation of the SDP model. The fact that the simple model ignored the possibility of future detections of the species became important only when the probability of species detection was low and its probability of persistence was high.

To sample or eradicate? A cost minimization model for monitoring and managing an invasive species
Tiffany L. Bogich, Andrew M. Liebhold, and Katriona Shea, Journal of Applied Ecology 45(4):1134-1142. 2008.

This article focuses on sampling and eradication strategies for an invasive insect (gypsy moth), but the ideas have parallels for invasive plants. The purpose of the model is to determine the optimal sampling density to use with the joint management goals of completely eradicating all isolated populations and minimizing the program cost. The authors develop a model in which a landscape initially devoid of the invasive species is populated over time in a random spatial pattern using a model of spread. It is assumed that the species arrive in year 0 and monitoring begins in year 1 after the populations have grown. Using a probability detection function, the authors determine the total area of detected populations and hence the cost of both sampling and eradication efforts. The model shows that optimal sampling rate depends on both biological aspects (initial infestation density and population growth rate) and on economic parameters (such as length of monitoring program and per-acre eradication cost). It is shown that the optimal sampling density needed to ensure early detection and eradication is higher for shorter monitoring programs, but while this initial sampling density leads to higher yearly costs, the overall program cost is smaller because the higher population detection rate leads to earlier eradication.

More Opportunities to Learn

The 2010 Tamarisk Symposium will be held January 12-13, 2010 in Grand Junction, Colorado. The latest news and research on tamarisk biocontrol, management, and riparian restoration will be presented. Early registration deadline is December 31.

Many aspects of natural resource management – including an Invasive Species Symposium – will be featured at the first-ever joint annual meeting of the Weed Science Society of America and the Society for Range Management, February 7-11, 2010 in Denver, Colorado. Research, on-the-ground success stories, tours, and special sessions will be offered. Early registration deadline is December 4.

If warm weather and tropical breezes sound appealing, check out the annual meeting of the Western Society of Weed Science to be held March 8-11, 2010 in Waikoloa, Hawaii. Attendance is open to anyone with an interest in weed science. Presentations and posters about new research will be featured. Early registration deadline is February 15.

The introduction and spread of invasive species in freshwater and marine environments will be highlighted at the 17th International Conference on Aquatic Invasive Species August 29-September 2, 2010 in San Diego, California. Abstracts of presentations and posters are being accepted through December 11.

CIPM Online

The following briefs, resources, events, and job listings have been added to our website since the last issue of this newsletter.

BRIEFS

FREE Web Seminars on Inventory and Survey Methods for Invasive Plants
Six FREE interactive web seminars on inventory and survey methods for invasive plants are offered by the Center for Invasive Plant Management during January and February 2010. There is no fee for the seminars, but advanced registration is required. Participants will be provided with reading materials in advance of each seminar. Learn more and register here.

Report Discusses Options for European Policy on Invasives
A report discussing options for developing a European policy on invasive species was recently posted by the Institute for European Environmental Policy. The report includes an estimate of the costs caused by invasives to the European economy.

Webcast Clarifies Aquatic Pesticide Permitting
In October the U.S. Environmental Protection Agency (EPA) offered a two-hour webcast providing updates on the development of a general permit for the National Pollutant Discharge Elimination System (NPDES). This permit will be implicated in pesticide applications in, over, or near bodies of water. The webcast can be viewed in EPA archives.

RESOURCES

Visit our website to browse extensive resources for funding opportunities, invasive plant information, management, education, CWMAs, agencies and organizations, and more.

Pest Threats Website
This site offers photographic keys to help diagnose and identify exotic pest and disease problems that are a threat to the United States.

Exotic Species: Environment In Focus Topic of the Week
The Biodiversity Institute of Ontario discusses exotic or introduced species. Explore top related websites and supplementary reading among other features. (From Earth Portal News).

CALENDAR

View our CALENDAR page for more upcoming events.

California Weed Science Society 62nd Annual Conference
11-13 January 2010 | "Looking Into the Future of Weed Control," to be held in Visalia, California (USA).

Invasive Plant Council of British Columbia's Unique Habitats, Unique Challenges
19-20 January 2010 | Delta Vancouver Airport Hotel | Vancouver, British Columbia (Canada).

Climate Change and the Implications for Plant Protection Symposium
25-27 May 2010 | University of Guelph | Guelph, Ontario (Canada).

Weeds Across Borders 2010
1-4 June 2010 | National Conservation Training Center | Shepherdstown, West Virginia (USA).

24th International Congress for Conservation Biology
3-7 July 2010 | Edmonton, Alberta (Canada).

Oklahoma Invasive Plant Council's 2nd Annual Meeting
14 July 2010 | Oklahoma State University | Oklahoma City, Oklahoma (USA).
Check back for more details.

17th International Conference on Aquatic Invasive Species
29 August-2 September 2010 | Westin San Diego | San Diego, California (USA).

JOBS

Supervisor, Platte County Weed and Pest Board
The Platte County Weed and Pest Control District Board of Directors is seeking a full-time employee for the position of "Supervisor." Application deadline is December 7, 2009.

Assistant Professor, Arizona
The University of Arizona is inviting applications from applied climatologists, quantitative ecologists, and ecological modelers for the tenure-track position of Assistant Professor with an emphasis on Phenoclimatology.

Coordinator, Gallatin County Weed District
The Gallatin County Weed District is seeking a full-time employee for the position of "Weed District Coordinator." Application deadline is December 18, 2009.