



# NEWS

from the CENTER FOR INVASIVE PLANT MANAGEMENT

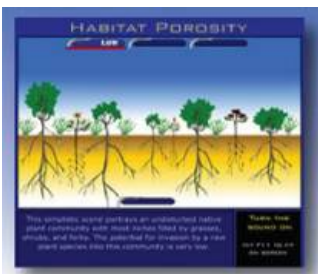
June 2009

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## Improving Science Literacy with Visual Communications



Communicating science clearly, accurately, and without bias to natural resource managers, policy makers, and the general public has broad implications for implementing science-based solutions to environmental problems such as non-native species invasions. When science-based information is communicated effectively, it draws audience attention and increases understanding of complex ecological issues. This increase in science literacy enables individuals to make informed decisions that can drive social change and ultimately influence environmental policy. Visual elements such as diagrams, illustrations, images, and animations can assist in processing and comprehending complex information.

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## *Ventenata dubia*: An Increasing Concern to the Inland Northwest Region

By Dr. Tim Prather

*Ventenata* (*Ventenata dubia* [Leers] Coss), also known as North Africa grass, is an exotic winter-annual grass of increasing concern to the Inland Northwest region, yet little research has been conducted on its biology and management. The presence of *ventenata* was first reported in 1957 in northern Idaho. By the mid-1980s, survey records indicated that *ventenata* was present throughout the Pacific Northwest where it was found to be weedy in bluegrass, alfalfa, winter wheat, pasture and rangeland. The first entry into a new area may occur through roadside introduction or contaminated hay. *Ventenata* is found in Washington, Oregon, Idaho, Utah, Wyoming and Montana.

### Impacts

Botanists have reported increased dominance of *ventenata* in grasslands previously dominated by downy brome (cheatgrass, *Bromus tectorum*). Recent increases in *ventenata* populations have also been reported to the United States Department of Agriculture-Natural Resource Conservation Service (USDA-NRCS) and the USDA Farm Service Agency (FSA) field offices and university extension-systems across a number of perennial grass production systems including pasture, hay, and Conservation Reserve Program (CRP) land where significant negative impacts have occurred. The USDA-NRCS Plant Materials Center (Pullman, WA) conducted a distribution survey of *ventenata* in the Inland Northwest in 2008. *Ventenata* was present in 74% of the counties surveyed. Questionnaires were also distributed to regional NRCS field offices to determine the types of land use affected and current management practices. Half of the people who responded to the questionnaire stated that *ventenata* was a problem in pasture, hay, or CRP production systems. Timothy

(*Phleum* spp.) hay seems particularly susceptible to damage and some farmers in north central Idaho report disking timothy fields that are only 3 to 4 years old because of ventenata. In addition to competitive interactions, ventenata has wiry stems that can stop a swather, preventing harvest in some cases. Ventenata appears to have little forage value with infested areas not sustaining livestock.

### Biology and Identification

Ventenata grows across a wide range of precipitation that spans 14 to 44 inches per year. Ventenata germinates in the fall, typically about 2 weeks after downy brome. Flowering occurs in the spring and seed shatter in early summer. The plant tends to be 12 to 30 inches tall, with wiring stems, and leaves clumped into a bunch at the base. A good description of the plant can be found online.

### Management

Control of ventenata is not achieved with mowing. Continued fallow (chemical or mechanical) for a couple of years has dropped populations to low levels. Grazing does not seem likely since animals tend to avoid it. Several herbicides have been effective; the challenge has been finding products that are labeled for use in a number of crops. Herbicide products that show promise include Plateau, Paramount, Journey, Sinbar and Outrider. Herbicide labels, of course, must be consulted to ensure proper use. Quite often the challenge is to control ventenata while preventing perennial grass injury. Researchers at the University of Idaho are working with the USDA-NRCS Plant Materials Center in Pullman to conduct research on the biology and management of this weedy annual grass. We are developing recommendations based on existing perennial grass cover to determine appropriate management options.

*Dr. Tim Prather is Associate Professor of Weed Ecology at University of Idaho in Moscow, Idaho.*

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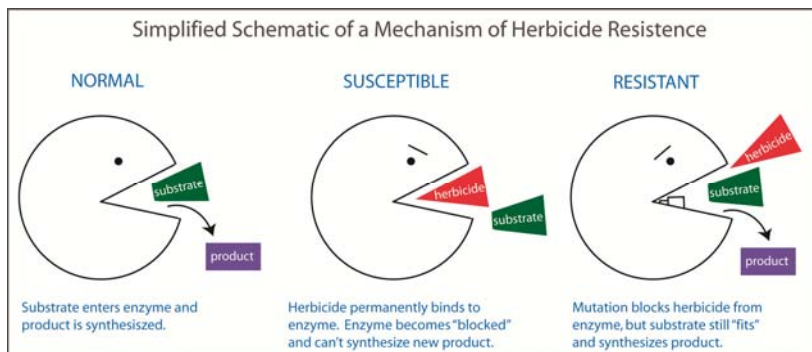
## How Herbicide Resistance Works

### The Basics

Herbicide resistance is the inherited ability of a plant to survive and reproduce following exposure to a dose of herbicide that would normally be lethal to the species. Resistance occurs naturally due to selection, as a result of random and infrequent genetic mutations, and is not caused by herbicide induced mutations. Herbicide resistant plants may occur naturally and infrequently in weed populations that are predominantly herbicide susceptible, and the use of herbicide provides the pressure that selects for herbicide resistant plants. Repeated use of the same herbicide, or one with the same “site of action”, will rapidly (over just a few generations) lead to an herbicide resistant population. While this phenomenon is common in weeds in agricultural production systems, it is still rare with invasive plants in more natural settings. This is likely because the selection agent, herbicide, has not been as aggressively applied outside of production systems.

### A Bit More Depth

Most plants contain a tremendous amount of genetic variation which allows them to survive under a variety of environmental conditions. Herbicides are designed to affect a specific site of action within a plant. For example, herbicides may affect certain enzymes which contribute to the production of amino acids or lipids, or they may interrupt photosynthesis, any of which would be fatal to the plant. The site of action is typically controlled by only a single gene, and any mutation (natural genetic variation) of this gene that causes even minor changes in the way it is expressed, will cause resistance by modifying the site where the herbicide has the toxic effect. Essentially, after gene mutation, the herbicide no longer “fits” into the location where it causes toxicity and the plant is no longer susceptible to the herbicide.



*Diagram modified from B. Dyer, Montana State University*

Plants that do not have the genetic mutation are still susceptible to the herbicide and are killed, leaving only resistant plants to survive and reproduce. Over time, the seed source of susceptible plants will be depleted and the entire

population will consist of resistant plants. The diagram below illustrates this evolution of herbicide resistance (percent values are arbitrary).

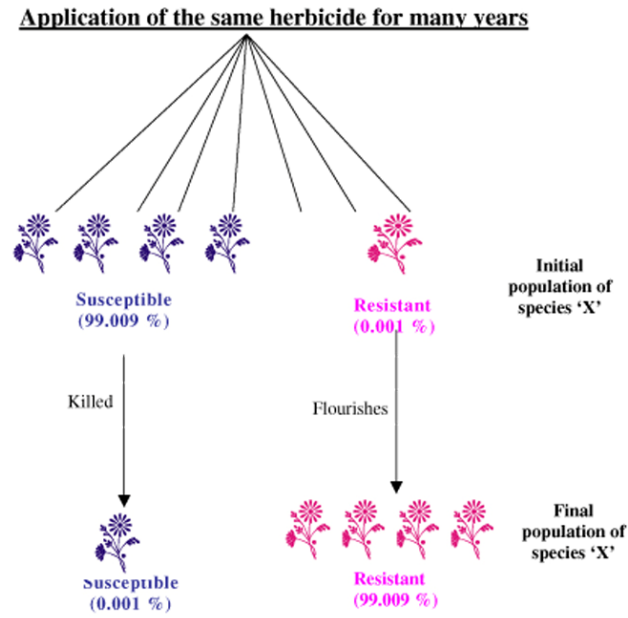


Diagram from Tharayil-Santhakumar, N. 2003. *Mechanism of Herbicide Resistance in Weeds*. University of Massachusetts, Amherst, MA.

### Some Statistics

There are currently 326 weed species with resistant biotypes, most of which have developed since the 1980s. Some of the invasive plants for which resistant biotypes have been discovered include Russian thistle (northwestern states), yellow starthistle (Washington), Canada thistle (Europe) and cheatgrass (Oregon and Europe). For more information on herbicide resistance by specific species visit: <http://www.weedscience.org/summary/MOASummary.asp>

### World Wide Chronological Increase in the Number of Herbicide Resistant Weeds

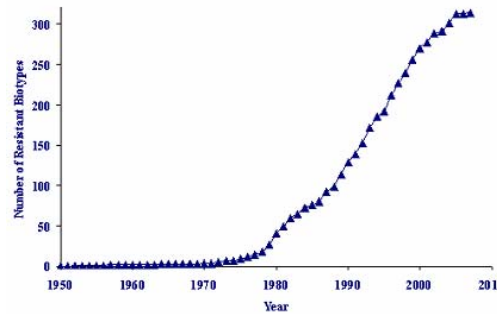


Diagram from Heap, I.M. 2007. *Herbicide-Resistance and Weed-Resistance Management*.

### Prevention and Management

In cropping situations, the key to preventing resistance is to rotate herbicides so that ones with different sites of action are used. This will prevent the buildup of a population of weeds resistant to a certain type of herbicide. Also, non-chemical weed control techniques such as crop rotation, cultivation, mulching or hand weeding can be used to break the cycle of resistant biotypes surviving an herbicide application. While many of these techniques are not available in natural settings, the principal remains the same. Different herbicides should be used for repeat treatments, and other forms of weed control including hand pulling or biological control (where available) should be used. Finally, a monitoring program can be useful to detect weeds that were not killed by an herbicide treatment.

### Acknowledgements

Much of the information in this summary came from:

Prather, Timothy S., Joseph M. DiTomaso, Jodie S. Holt. 2000. Publication 8012. *Herbicide Resistance: Definition and Management Strategies*. University of California, Division of Agriculture and Natural Resources.

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## CWMAs Can Influence Policy

Legislators at the state and national levels are always glad to hear straight talk from “folks on the ground” – what’s working, what’s not, and ideas about what’s needed to improve programs and processes in the future. Those involved in Cooperative Weed Management Areas (CWMAs) are in a strong position to provide credible information and opinions to policymakers. Two presentations at the “[People-Powered Projects](#)” national CWMA conference (2008) provided examples of successful grassroots involvement in policymaking:

- **What Weed Management Areas Can Do for State and Federal Policy:** Doug Johnson (California Invasive Plant Council) provided practical, how-to information based on his extensive experience organizing statewide efforts in California and his work on regional and national policy issues.
- **Impacting Invasive Plants Policy in Your State:** Jamie Nielsen (University of Alaska-Fairbanks Extension, at that time) described Alaskan efforts to gain attention for invasive plant issues, culminating in passage of state legislation.

These practical and inspiring 15- to 20-minute presentations (PowerPoints with audio) are available to [view online](#).

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## Remember: Enter Information on the National CWMA Map

Be sure to post your CWMA information on the [national map](#) of Cooperative Weed Management Areas that is being compiled by the [National Network of Invasive Plant Centers \(NNIPC\)](#). Programmed and hosted by NNIPC partner [Center for Invasive Species and Ecosystem Health](#), the interactive Google map illustrates the broad range of community-led invasive plant management efforts in the U.S. All CWMAs, Cooperative Invasive Species Management Areas, Partnerships for Regional Invasive Species Management, Weed Prevention Areas, etc., are invited to input their data. The map is being created by the grassroots for the grassroots.

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## Court Case Raises Questions

A recent court decision has thrown into question the rules that will govern the application of pesticides in, over, or near bodies of water – leaving the Environmental Protection Agency (EPA), the government’s regulating arm, in limbo. Since 2007, the EPA has asserted that pesticides applied in accordance with the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) are exempt from the Clean Water Act’s permitting requirements. In January 2009 the [Sixth Circuit Court of Appeals](#) over-ruled the [EPA’s interpretation](#). The implication for natural resource managers is that they will need to obtain National Pollutant Discharge Elimination System (NPDES) permits to apply pesticides in, over, or near water in the future. However, in April the EPA filed a [motion with the Court](#) to delay implementation of this ruling until April 2011 to allow EPA and authorized permitting authorities time to develop and issue appropriate Clean Water Act permits. Until the court decides on the motion, natural resource managers should proceed as in recent years, i.e., in compliance with FIFRA and applicable state laws, according to the [EPA](#). The EPA estimated that the Court ruling will affect 365,000 pesticide applicators who perform 5.6 million pesticide applications annually.

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## Preventing Exotic Wildlife Imports Sparks Debate

This spring the U.S. House of Representatives saw the introduction of the “Nonnative Wildlife Invasion Prevention Act” (HR 669) which has sparked heated debates recently.

The bill aims “to prevent the introduction and establishment of nonnative wildlife species that negatively impact the economy, environment, or other animal species’ or human health” and requires the U.S. Fish and Wildlife Service to assess the potential risks associated with a species proposed for import before deciding whether to allow or prohibit it. Proponents of the bill, such as the National Environmental Coalition for Invasive Species (NECIS), affirm that the bill’s provisions will keep potentially harmful animals out of the U.S., thereby avoiding costly invasions such as those by the snakehead fish, Burmese python, and giant Gambian rat. NECIS has compiled a [Myths vs Facts](#) document regarding HR 669. Opponents of the bill, such as the Pet Industry Joint Advisory Council (PIJAC), agree that the U.S. should have a risk-based process to prevent the introduction of harmful, nonnative species. However, they argue that HR 669 does not adequately consider socio-economic issues and risk-management options and would require funds and staffing not currently available to the U.S. Fish and Wildlife Service. PIJAC hosts an [HR 669 Forum](#) online regarding the legislation.

As of mid-May, subcommittee hearings had been held in the House with testimony from proponents and opponents. The text of HR 669 can be found at the [Library of Congress](#).

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## Biofuels White Paper Will Provide Recommendations to Agencies

The National Invasive Species Council's (NISC's) Invasive Species Advisory Committee (ISAC) is preparing a white paper regarding the use of invasive plants as biofuels. Expected to be completed and released this summer, the paper will synthesize current science and provide recommendations to federal agencies. Editors are Dr. Joe DiTomaso, University of California-Davis, and Dr. Jamie Reaser, Pet Industry Joint Advisory Council.

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## 2009 Request for Proposals: Pulling Together Initiative

The Pulling Together Initiative (PTI) seeks proposals that will help control invasive plant species, mostly through the work of public/private partnerships such as Cooperative Weed Management Areas. PTI applications are accepted from private non-profit (501)(c) organizations, local, county, and state government agencies, and from field staff of federal government agencies. Individuals and for-profit businesses are not eligible to receive PTI grants, but are encouraged to work with eligible applicants to develop and submit applications to PTI. **Application deadline: June 30, 2009.** [Read more about PTI request for proposals...](#)

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## CIPM Honored with Special Achievement Award



Michael Lusk, USFWS National Invasive Species Coordinator, presented CIPM with the Invasive Weeds Awareness Coalition's 2009 special achievement award *for outstanding work in promoting education and research in invasive plant management and National Invasive Weed Awareness Week support*. The Center has wholeheartedly supported the NIWAW event over the years and it was a great honor to be recognized by the Coalition for these and other contributions to ecologically-based invasive plant management and awareness in the U.S.

*Liz Galli-Noble (right) and Janet Clark (left) accepting the IWAC special achievement award on behalf of CIPM during the NIWAW reception on February 25, 2009.*

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## CIPM Receives Grant for Saltcedar Research in Montana

CIPM, in cooperation with Montana State University Extension and the Department of Land Resources and Environmental Science faculty, received \$24,468 in grant funding from the Montana Department of Agriculture's [Noxious Weed Trust Fund](#) to conduct a research investigation focusing on saltcedar (*Tamarisk* spp.) invaded sites along the Yellowstone, Big Horn and Musselshell rivers and possibly Fort Peck Reservoir. Saltcedar is a Category 2 noxious weed in Montana with the highest priority for management action and supporting research. With the aid of land managers who have implemented saltcedar control projects along the targeted watercourses within the past 10 years, researchers will select study sites early this summer, followed by vegetation monitoring and soil sampling later in the season. Sample analyses will be conducted in the fall at MSU and project completion is slated for winter 2009.

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## CIPM Store: Featured Products



Last Chance to Order at 2006 Prices, CIPM's Famous "Plastic Weeds" – Remaining stocks of lifelike models of four of the most troublesome western weeds— spotted knapweed, leafy spurge, Dalmatian toadflax, and yellow starthistle—are available for your education and outreach activities at our 2006 prices, while supplies last. New stocks of these four weed models have been reordered but new prices will increase an average of 70% per item! The \$26 price per box of knapweed (#4468), Dalmatian toadflax (#4469), and leafy spurge (#4470) will be effective through July 30, 2009. Educational and display bouquets will remain at \$18 and \$38, respectively, also through July 30, 2009. All prices include shipping and handling. *Sorry, boxes of yellow starthistle are no longer available at reduced prices.* Visit the [CIPM Store](#) and send an email to [orderpubs@montana.edu](mailto:orderpubs@montana.edu) to place your order and get in on this great deal. To order educational and display bouquets, send an

email to [weedcenter@montana.edu](mailto:weedcenter@montana.edu).

The long-awaited, four NEW weed model species – garlic mustard, saltcedar, purple loosestrife, and perennial pepperweed – will go on sale by late June. So visit the CIPM Store in the next few weeks, have a look at these great new educational products and place your order!

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## CIPM Online

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

### UPDATES TO THE CIPM RESOURCE DIRECTORY

*The online resources featured in this section are archived within CIPM's online resource directory. [Visit our website](#) to browse extensive resources for funding opportunities, invasive plant information, management, education, CWMA's, and agencies and organizations.*

**CIPM Resource Directory Impacts Section** – Explore an extensive library of reports, publications, and assessment tools pertaining to the impacts of invasive plants. Resources are listed in five categories: Facts and Figures, In the West, Economic, Ecological, and Wildlife.

**Mistaken Identity? Invasive Plants and their Native Look-alikes** – Targeted at land managers, gardeners, conservationists, and all others interested in plants, this booklet covers over 20 invasive species and their native look-alikes in the mid-Atlantic region. Chapters on controlling invasive plants and a list of useful resources are also included. Higher quality 8meg file | Lower quality 2meg file

**USA National Phenology Network** – Harnessing the power of people and the Internet, the USA National Phenology Network brings together citizen scientists, government agencies, non-profit groups, educators and students of all ages to collect data and share information about the impacts of climate change on plants and animals in the United States.

**Wildland fire in ecosystems: fire and nonnative invasive plants** – This state-of-knowledge review of information on relationships between wildland fire and nonnative invasive plants can assist fire managers and other land managers concerned with prevention, detection, and eradication or control of nonnative invasive plants.

**Identifying Research Gaps and Priorities for Invasive Plants in California** – The California Invasive Plant Council (Cal-IPC) produced a summary of major research needs for California invasive plants that can be used to inform state policy and provide ideas for researchers, especially graduate students. The report includes a range of topics from weed biology and ecology, to ecological and economic impacts, to management and restoration methods, to social and policy issues, and more.

**Updates to the Tamarisk Coalition Website** - The website for the Tamarisk Coalition was updated recently with several new features. Among the highlights of the updates are: A draft of the new BMP Revegetation paper by Anna Sher, Ken Lair, and Michelle DePrenger-Levin; grant criteria for the CWCB matching funds program; new stories on the Home page; updates to Staff and Board members; 2009 Conference and Biocontrol Monitoring activities; financial highlights; and the new 2009 Spring Volunteer Schedule.

**Nature Conservancy's Global Invasive Species Team and INVASIPEDIA Websites Move** - The Center for Invasive Species and Ecosystem Health at The University of Georgia, in collaboration with the Global Invasive Species Team, is pleased to announce that the GIST web site and INVASIPEDIA are now available through [www.invasive.org](http://www.invasive.org). All of Barry Rice's 240 images and John Randall's 911 images that were on the GIST web site have been incorporated into the Bugwood Image Database and [www.invasive.org](http://www.invasive.org).

### ADDITIONS TO THE CALENDAR

*View our [CALENDAR](#) page for more upcoming events.*

**10<sup>th</sup> International Conference on the Ecology and Management of Alien Plant Invasions (EMAPi 10)**  
23-27 August 2009 | Stellenbosch (South Africa).

**BIOLIEF World Conference on Biological Invasions and Ecosystem Functioning**  
27-30 October 2009 | University of Porto (Portugal).

**4<sup>th</sup> International Fire Ecology and Management Congress: Fire as a global process**  
30 November – 4 December 2009 | Savannah, Georgia (USA).

**Society for Range Management and Weed Science Society of America**

7-10 February 2010 | Sheraton Denver Downtown Hotel | Denver, Colorado (USA).

**Island Invasives: Eradication and Management**

8-12 February 2010 | Tamaki Campus, University of Auckland (New Zealand).