

PROJECT TITLE *Non-native Plants That Threaten Arizona Environments: Updates to K.F. Parker's (1972) "Illustrated Guide to Arizona Weeds."*

PROJECT LEADER Ed Northam

PROJECT TEAM MEMBERS – [U-of-A: Larry Howery, Jim Sprinkle, Chris Jones, Jeff Schalau, Rob Grumbles, Kim McRenyolds, Bill McCloskey, Wade Albrect, Kai Umeda, Al Fournier, Cathy Cromell, Jo Cook, Linda Masters], (ASU: Kelly Steele, John Brock) and invited weed management personnel in Arizona's businesses and governmental agencies.

LOCATION -- statewide

CRITICAL ISSUE Integrated pest management is purposely designed to be a process utilizing multiple techniques for preventing or reducing pest problems and decreasing risks associated with pest management practices. Regardless of the type of pest organism, all successful IPM decisions depend on accurate identification, plus a basic understanding of the biology of a targeted species. Likewise, a core requirement for designing an effective weed awareness and education program is obtaining accurate descriptions and up-to-date biological summaries of harmful plants.

"Arizona Weeds" was first published 34 years ago and reprinted in 1982. Since then, numerous non-native plants which qualify as economic or environmental pests have been introduced into Arizona's grazing lands, forests, streams, crop lands, deserts, parks, wildlife refuges, urban areas and nature preserves. Furthermore, since the 1970's, a phenomenon known as biological invasion has been recognized as a threat to native plants, fish and wildlife populations, water resources, crop productivity and outdoor recreational sites. However weed management personnel involved in awareness education or weed management training have few published materials available as references, or training aids, which address detrimental effects of human-induced pest plant migrations in Arizona. Therefore, this proposal requests funding to produce information summaries for weed species which are not discussed in our "Weed Guide

EXAMPLES OF SOME WEEDS THAT HAVE ATTAINED PEST STATUS SINCE 1973.
Aquatic/Riparian: Giant Salvinia; Hydrilla; Parrot feather; Russian olive.
Forbs: African mustard; Diffuse knapweed; Musk thistle; Onionweed.
Grasses: Buffelgrass; Fountaingrass; Quackgrass; Ravennagrass.

Improving economic benefits related to adoption of IPM practices is the first goal of the national IPM program roadmap, and goal three includes minimizing injurious effects of pests. National roadmap concepts emphasize the following environmental categories as priority situations where IPM practices are needed: (1) production agriculture, (2) natural resource/recreational sites and (3) human residential/public areas. Since invasive weeds encroach into nearly all land and aquatic habitats, both national goals and the three environments specified above will be within the domain of this proposed Arizona-wide project because noxious/invasive plant infestations are not constrained by political, cultural or land use boundaries.

Within the bounds of national roadmap concepts, an IPM coordinating committee Advising Arizona's Pest Management Center identified five focal

areas of IPM programming which need state-wide emphasis including (1) enhancing noxious or invasive weed management efforts, especially increasing communication and efficiency among partners in the noxious/invasive weed management community and (2) linking applied IPM research with statewide outreach. These two focal areas will be addressed within the outcomes and impacts of this proposal to produce invasive weed education and vegetation management training materials.

INPUTS/BUDGET

---- **A total of \$3000.00 is requested to fund Ed Northam's work as project coordinating person, literature searching, writing summaries and obtaining weed photos. Additional funding input includes \$774.00 for ERE, \$600.00 for website maintenance, \$100.00 for travel and \$76.00 for photographic supplies and services and \$3023.00 for printing charges. Total amount requested is \$4,500.**

---- Time and energy of the project advisory team participants during prioritizing weed species to be addressed, review of drafts, etc.

OUTPUTS _Consultation with advisory team members listed above prior to publishing species summaries will produce peer reviewed documents crafted to communicate and illustrate concepts about problems caused when rapidly colonizing non-native plants migrate into riparian sites, grazing lands, forests, field crops, rights-of-way, residential zones, parks and recreational areas (summaries will be designated as Arizona Weed Notes or AWN's).

Activities. ---- **Work will begin by surveying advisory team members via email and follow-up phone conversations to determine a master list of Arizona noxious/invasive introduced weed species from a group of 35 species not listed in Parker's weed manual, then have advisory team select the top two species for posting on the website. [complete by 2 March 2007]**

---- Consult advisory team concerning layout and illustrations for website and pdf summaries for each species selected for publication. **[complete by 30 March]**

--- Search scientific and technical literature for biology, control, distribution, identification and economic or environmental impacts caused by the two pest plant species selected for publication. **[complete by 31 May]**

---- Submit draft versions of each species summary to advisory team for review. **[complete by 30 June]**

---- Submit final drafts of each species to peer review process. **[complete by 31 July]**

Associated activities will include:

---- Additional outreach will be attained by preparing electronic images and PDF files for distribution via U-of-A web sites.

---- Start a multi-year project to publish a new noxious/invasive weed species information series for updating Parker's weed guide.

----- Begin posting noxious/invasive weed information on websites such as Arizona Pest Management Center, Maricopa County Master Gardener and Maricopa County Invasive Plants Program.

----- Inform clientele and educators about Invasive Plants Program.

----- Seek additional funding to continue producing AWN's summaries.

Participants. ----- There is already a high degree of reliance on "An Illustrated Guide to Arizona Weeds." Two levels of clients will use Arizona Weed Notes. First are IPM and weed management educators who will use these species summaries as reference materials and training aids. A second level of product users includes private citizens, pest control advisors, environmental consultants, researchers, educators, regulatory personnel, homeowners, vegetation management professionals, commercial weed control applicators, conservationists and public land managers. In other words, extension personnel, other Arizona weed management instructors and their trainees will leave workshops, clinics, conferences, field days and seminars with an increased ability to communicate and respond to new pest plant threats and to apply integrated management to non-native plant encroachment into Arizona's lands and waters.

OUTCOMES Once AWN's are available, the broad range of clients identified above (Arizona's state-wide weed management guild) will have either printed or electronic educational tools to incorporate new pest information into their repertoire of weed management expertise.

Concurrent and future outcomes which can arise from this project include:

----- Begin a multi-year project of compiling, summarizing and distributing research and educational information bibliographies for priority noxious / invasive weeds of Arizona.

----- This work will identify research gaps in biology, control, impact and identification topics for plants which are known pests in Arizona.

----- As information about Arizona's worst pest plants become available, weed control practices will improve.

----- An established publication record will increase the Maricopa Co. Invasive Species Program's competitiveness for regional and national funding along with unrestricted gift funding.

----- Creditability and relationships with clientele will improve.

----- As literature searches and publications are accomplished, an information database will become available as a tool for teaching and research faculty.

PLAN FOR EVALUATION. ----- Usefulness of Arizona Weed Notes will be evaluated by monitoring the number of hits on websites where electronic versions of AWN's are available (including AZ Pest Mgmt. Center, Maricopa Co. Master Gardener and Maricopa Co. Pest Plants).

----- Periodic surveys of natural resources Extension faculty and non-university weed management people will be used to evaluate AWN's usage.

----- Long term changes in public awareness and improved economic and/or environmental conditions will not be measurable by projects funded for less than one growing season.