<p style="text-align:center">Eastern Invasives Management Network
<u>Allegany Forests Project</u></p>

Threat Abatement Priorities and Strategies

Key Ecological Factors

For the first workshop you listed and described your conservation targets. Now, please list and briefly describe the 'key ecological factors' necessary for long-term viability of up to 3 of your system targets (communities, matrix communities) that are threatened by invasive plants.

Allegany Forests has been a focal site in an Efroymson workshop series concurrent with this Invasive Species Network, and so we have made significant progress in defining conservation targets since our last meeting. See the attached table for a summary of our conservation targets.

Our Key Ecological Factors and Ecological Integrity Assessment remain in working draft form. The four targets most vulnerable to invasive plants follow, with brief description and list of the key ecological factors:

Low- to Middle- Elevation Dry and Dry-Mesic Forests

This target is a complex of large patch and matrix forming forest types which occur on side slopes, "flats" and ridgetops, on acidic, usually shale, substrates. The distribution is controlled by the interaction of topographic position (including aspect and slope), soils, and moisture. Fire was an important process in maintaining composition and structure in the past, but has been suppressed in modern times.

a) overall spatial extent, size of core areas

b) well-developed vertical structure w/ regeneration of canopy species

c) mosaic of seral stages across the landscape

d) naturally occurring gaps regenerating with native species

e) age class diversity of canopy-level trees

f) herbaceous flora including some mature forest indicator species

Basic Low- to Mid-Elevation Mesic Forests

Small to large patch communities of sheltered mesic landforms (ravines, coves, lower slopes). Distribution and composition controlled by topographic position, moisture, and edaphic factors.

a) size - extent of suitable habitat occupied by target

b) naturally occurring gaps regenerating with native species

c) well-developed vertical structure, regeneration of canopy species

d) age class diversity of canopy-level trees

e) herbaceous flora including some mature forest indicator species

Riparian Zone Communities

This target includes riparian forest and dry open sandy patches which are habitat for *Cicindela ancocisconensis* (rare tiger beetle). The primary controlling process is seasonal flooding and periodic major flood events, and the associated erosion and deposition of sandy and silty material.

a) size - extent of floodplain with natural vegetative cover

b) open sandy habitat patches maintained/recreated across landscape

c) composition of woody and herbaceous species predominantly native

Barrens and Woodlands

Shale barrens and open woodland communities. Distribution controlled primarily by topographic position, especially aspect and slope. Distribution and composition also controlled by edaphic factors.

a) connectivity (metapopulation dynamics) and landscape context -- forested landscape

b) species composition - presence of shale barrens species, absence/low cover of non-native species

Current Threat Abatement Priorities

List your current priorities for invasive plant threats at your conservation area. This may be by species (or groups of species) and/or by locations within your conservation area. Indicate how these priorities are tied to your conservation targets and, where appropriate, to the key ecological factors upon which they depend.

We completed a roadside-based invasive species survey over a 40,000 acre area of the Allegany Forests Project Area in Summer 2002, and are still working on analyzing results. We have not yet written recommendations, developed a plan, or set priorities., but have started to formulate some ideas. Here is a preview of possible priorities:

"Clean" areas
Over half of the plots sampled in the roadside-based survey had no invasive species. If these clean plots represent "core areas" that are largely uninfested, monitoring and rapid response to keep these areas weed-free will be a high priority.

Species with limited distribution, significant potential impacts:

The survey shows three species which were virtually absent from our roadside-based survey (*Elaeagnus umbellata*, *Polygonum cuspidatum*, and *Polygonum perfoliatum*), indicating that these harmful invasive species are probably absent or very uncommon in the forest. High priority will be assigned to these species, for early detection and rapid reponse. (Consider, however, *E. umbellata* in wildlife plantings -- it's out there, wildlife plantings might not have been detected in road-based survey.)

A total of 9 species occurred in fewer than 5% (N < 55) of the plots sampled: the three species mentioned above, plus *Berberis thunbergii, Centaurea maculosa, Coronilla varia, Linaria vulgaris, Lonicera japonica, and Lonicera spp. B. thunbergii*, in particular, was found at less than *0.5%* of the sampled plots. These species may also be considered high priorities because their distribution is relatively limited, although further analysis of

spatial patterns, and further testing of the effectiveness of the road-based survey at detecting these species, is warranted, prior to finalization of a management plan.

Species with very extensive distribution and significant impacts:

Survey showed that *Microstegium viminium*, *Aliaria petiolata* and *Ailanthus altissima* are the most widely distributed species. The current and potential impacts of these species on our conservation targets is probably quite high, especially for the following targets:

- Riparian Zone Communities (*Microstegium* -- using water courses as corridors, dominating herbaceous layer in floodplains, may be impinging on tiger beetle habitat*)*

- Basic Low- to Mid-Elevation Mesic Forests (*Microstegium* and *A. petiolata* -- altering herbaceous species composition and soil chemistry*)*

- Low- to Middle- Elevation Dry and Dry-Mesic Forests (*A. altissima* -- capturing gaps created by treefall, fire, storms, altering regeneration dynamics*)*

- Barrens and Woodlands (*A. altissima;* although other species identified as among the worst weeds on Shale Barrens include several of those mentioned above under "species with limited distribution")

We have not yet determined what or if management action is warranted for these species. Because of the extensive and widespread distribution across a large landscape, control over the entire site would involve a great investment of resources. However, the current and future assessments and analysis may suggest more strategic and high impact management actions, which could be justified as high priorities.

Have any of the species or infested locations which were formerly regarded as high priorities been given lower priority? If so, describe why. If not, select a species or infested location and make an argument for lowering its priority (play devil's advocate).

One could (and ultimately maybe we will!) argue that because *Microstegium* is so widespread, and because it's movement and spread seems to be facilitated by natural as well as prevalent anthropogenic disturbances, it should be assigned a low priority.

Threat Abatement Strategies

Describe the strategies that you have developed thus far for abating high priority invasive species threats. Include any strategies designed to prevent new invasions or to quickly detect and control new species or populations that do become established.

Current activities include:

- a stakeholders meeting to present and discuss results of 2002 survey work

- employing Maryland/DC Chapter's Weed Watchers/Weed Busters program on state land at Green Ridge State Forest.

- complete first iteration of Allegany Forests Conservation Plan (so we'll have higher level of confidence about where weeds shake out among highly ranked threats).

Ideas still in the formative stages include:

–   GIS product to help public and private land managers assess and mitigate risk of new or spreading weed problems as result of new/ongoing actions (i.e. road maintenance, culverts, timber operation, construction)

–   model/spatial analysis to guide highly strategic management of *Microstegium,* targeting source populations on roadsides, at culverts, and in ephemeral stream ravines to reduce propagule input to floodplains

–   further research/inventory to assess impacts of invasive species on interior forest gaps

–   continue collaboration with academic partners on applied research projects, to test management actions, develop new strategies for abating threats posed by invasive plants

Describe your vision of success for these strategies. If they succeed, what will your conservation area be like.

Public and private land managers working in full partnership with TNC, aware of problems invasive plants pose to forest health and biodiversity, engaged and equipped to take decisive and appropriate action as part of a coordinated landscape-scale weed management plan. Information and monitoring/management capacity in place so that no new major plant infestations become established.

Do you have any plans to measure the success of your strategies? If so describe them briefly.

In theory, of course, but strategies are still too vague to be more specific. If roadside-based survey proves to be a good indicator, we could repeat in the future -- it was efficient way of covering a very large portion of the landscape, and could be expanded to include private land without too much additional work. Have discussed in general terms future research which could test effectiveness of real management actions, i.e. continued applied research.