

MID-ATLANTIC EXOTIC PLANT MANAGEMENT TEAM

Exotic Vegetation Management Annual Report for Fiscal Year 2005

Host Park:
Shenandoah National Park
Luray, Virginia

James Åkerson

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Mid-Atlantic Exotic Plant Management Team
Natural Resources and Science
Northeast Regional Office – NPS
November 2005



Figure 1. Tree of heaven are dying after treatment at the East Chapel unit of Valley Forge. Hazard trees were rendered on a subsequent site visit. Initial treatment was done in a cooperative fashion with park staff, members of the Northeast EPMT, stationed at Delaware Watergap, and the Mid-Atlantic EPMT.



Figure 2. Spraying phragmites reed at Colonial. Special herbicide labeled for use near waters was used in the operation.

**Exotic Vegetation Management
Mid-Atlantic Exotic Plant Management Team
Annual Report for Fiscal Year 2005**

Start and End Dates: On-going since FY 2003

Lead Agency Staff: James Åkerson, Supervisory Forest Ecologist and Team Liaison (NPS Northeast Region (NER))

Field Personnel: Norman Forder, Crew Team Leader (NER); Dale Meyerhoeffer, Biological Science Technician (NER); M. Kate Jensen, Biological Science Technician (NER); Matthew Overstreet, Biological Science Technician (temporary-seasonal); and Kirill Kashin, SCA intern, among others ad hoc.

Funding Source: Base funding from NPS Biological Resource Management Division – Exotic Plant Management Team Projects (Natural Resources Challenge)

Funding Amount for Year (by source): (1) \$300,000 (BRMD – EPMT Projects). The amount available was decreased to \$297,000 due to a \$3,000 NPS Northeast Regional assessment. (2) \$180,000 (NRPP project earmarked for VAFO). (3) \$2,660 (Fee Demonstration – 20%).

NRC Base
\$300,000

NRPP
\$180,000

Project Fee Demonstration – 20%
\$2,660

SHEN Base
\$-0-

Other Sources – In-kind services and contributions to the program were received from 13 partner parks in the form of vehicle fuel, office and storage space, mapping products, geographic positioning of field sites, and park staff time in the field. In-kind contributions amounted to an estimated \$74,560.

Account Number (by source):

(1) 2144-6205-NYP - program operations, minor equipment, supplies, and support of an indefinite quantities contract for exotic plant control.

- Personal Services - \$230,851
- Supplies - \$23,343 (\$8,380 went directly to partner parks for herbicides and other supplies)
- Training - \$483
- Travel - \$28,446
- Equipment - \$3,139
- Vehicle - \$189
- Services - \$8,741 (including \$5,204 for SCA stipend and housing, \$2,500 to the indefinite quantities contract, and \$1,037 for Trimble GPS unit maintenance)
- Other - \$1,300

(2) 4846-0508-NNS - support of an indefinite quantities contract for exotic plant control at VAFO.

- Services - \$180,000

(3) 2340-2040-N2P - minor equipment and supplies for a SCA Team serving FRSP, PETE, & RICH.

- Supplies - \$2,394
- Equipment - \$261

Expanded Executive Summary

Fiscal year 2005 was the third year of operations for the Mid-Atlantic Exotic Plant Management Team (EPMT) and its overarching Mid-Atlantic Cooperative of parks. Housed at Shenandoah National Park, the Mid-Atlantic EPMT serves national parks in Virginia, Maryland and Pennsylvania. Beginning with twelve parks, a thirteenth participated by paying for services through an indefinite quantities contract to perform exotic plant control work (Valley Forge NHP). Representatives for each park comprise the Steering Committee that provides management direction and priority setting. The Team Liaison provides daily operations leadership and coordinates activities with individual parks. He also serves as the Contracting Officer's Technical Representative to oversee the field work of a for-profit contractor and a student volunteer organization. The Crew Leader provides direction for on-the-ground activity and oversees matters of safety, equipment maintenance, and staff training. Field work was accomplished with NPS crewmembers, student interns, volunteers, park staffs, and private contractors. Partnerships with park staffs, volunteer organizations, and neighboring landowners are increasing the effectiveness of treatments while broadening the organizational capacity to successfully address invasive plants within the Cooperative.

Significant Accomplishments

The following achievements are notable for Fiscal Year 2005.

- The Mid-Atlantic Cooperative completed field inventories on **9,061** acres, exotic vegetation control on **449** acres¹ at 13 parks, where **37** species were treated.
- The Cooperative's private sector contractor (Invasive Plant Control, Inc.) completed 1,857 acres of inventories and 172 acres of exotic controls (part of the total).
- The Cooperative's Student Conservation Association (SCA) Exotic Plant Team completed 266 acres of inventories and 51 acres of exotic controls (part of the total).
- The team completed retreatments of the cooperative bamboo control project at Shenandoah National Park with two park neighbors where all parties contributed to the overall 0.23-acre eradication effort.
- Permanent team members maintained state certification to apply herbicides within the Commonwealth of Virginia², Maryland, and Pennsylvania. Temporary employees and student interns obtained state certification for the Commonwealth of Virginia. The Team Liaison maintained state certification in all three states plus West Virginia.
- The Team minimized lost time due to accidents (-0- hours) by implementing a well executed and documented safety program with daily safety discussions.
- The Cooperative expanded its functional capacity by utilizing individual SCA interns, a SCA Exotic Plant Team, park volunteers, and utilizing a private sector contract – all with excellent success.
- The Team increased public awareness of invasive species issues by:
 - Participating in six newspaper and magazine articles
 - Publishing five articles in professional conferences and newsletters
 - Releasing nine fact sheets and activity reports and four project activity notices, and
 - Speaking at ten public or professional meetings.

(See the Appendix for added detail on publications, reports and interviews.)

¹ Includes treatment and retreatment acres for the year.

² Certification is generally required only of the Team Liaison or Crew Leader. Having all crew members become certified indicates the organization's high degree of interest in risk management and personnel safety.

Management Recommendations

Invasive exotic plants pose a very real threat to biological diversity and native species health. The Mid-Atlantic EPMT is an excellent foundation for preserving and protecting our natural and cultural park resources. With assistance from the Team, Booker T. Washington NM successfully achieved a park wide maintenance level of need in 2004³. The Cooperative should consider expanding its span of assistance to additional parks as existing parks reach maintenance levels. Unfortunately, most cooperating parks have lost ground budgetarily; many parks increasingly rely on Mid-Atlantic EPMT assistance for their sole source of exotic plant management. This means less progress can be made toward treating high priority species. All parks must aggressively seek specific project funding from NPS and nonprofit grant sources for project funding to shore up losses from other sources.

Utilizing a nonprofit grant, Shenandoah National Park initiated a program of short-term volunteer assistance for exotic plant control. It has great promise for increasing the level of exotic plant management possible in tight budget times. A modicum of funding is required to organize and furnish volunteers with equipment and supplies and to support a part-time volunteer leader. Other parks in the Cooperative may wish to pursue a similar avenue for increasing on-the-ground activity.

Finally, increasing the Cooperative's public outreach and education program would benefit the long-term effectiveness of exotic plant management. Individual parks should initiate public awareness campaigns to improve public understanding of exotic plant issues and, among other potential benefits, encourage their participation by refraining from the purchase and planting of invasive exotics on their own properties and support park efforts to control invasives.

Introduction/Background

Throughout the history of post-1492 settlement of the Americas, exotic species have either been accidentally introduced with new immigrants, dunnage, and trade goods, or purposefully introduced for supposed betterment of human health, agriculture, and land reclamation efforts. Negative impacts are readily apparent. Farmers and ranchers in the West became early proponents of "noxious" weed control to fight the economic losses caused by displacement of desired grass crops in grazing and agricultural land by exotic weeds. Ecologists warn of local native species losses and wholesale ecological change due to invasions of exotic species. Westbrooks (1998) believes that the homogenization of the world's flora and fauna leads to decreased biological diversity and long-term harm. He states, "Unlike chemical pollutants that degrade over time [rendering them harmless], invasive organisms can become established and reproduce. Once established, they can spread from site to site, and region to region, often without further human assistance." Elton (1958) believes that many native species will decline or disappear altogether due to invasives.

Recently, the National Park Service organized to create a concerted effort to control invasive vegetation. Sixteen EPMTs were established throughout the country to survey, control, and monitor invasive plants. Resisting biological invasion is an essential part of the agency mission to "conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such

³ GPRA defines the "maintenance level" as the point when control work is needed less than annually and outside funding and labor is no longer needed to keep up with the need.

a manner and by such means as will leave them unimpaired for the enjoyment of future generations” (U.S. Congress 1916).

Since the mid-1990s, parks within the Mid-Atlantic area increased their knowledge of local infestations and exotic plant control technologies. Colonial National Historic Park, Gettysburg National Military Park, and Shenandoah National Park created small programs to inventory and control invasives. With a successful NPS multi-year grant proposal in FY 2000 for the creation of a traveling exotics control team for parks in Virginia, there began an effort to cooperate with fellow parks and collaborate with surrounding landowners to control the worst of known infestations. The system of reconnaissance, species prioritization, and strategic planning that they developed helped them to quickly create a viable program. Recognition of their efforts came through the successful FY 2003 competition for national program base funding. It allowed the formation of a larger Cooperative and traveling team that as of FY 2005 served 13 national park units in Virginia, Maryland and Pennsylvania.

Partners

The Mid-Atlantic EPMT is the traveling team that functions within the Mid-Atlantic Cooperative of national parks within Virginia, Maryland, and Pennsylvania. Together, the body of park specialists and Team Liaison sets management priorities. The parks and team participate in on-the-ground control and assessment activities. A listing of partner parks and their primary representatives follows.

Figure 3. Table of partner parks within the NPS Mid-Atlantic Cooperative, describing the parks and contact persons participating in the Steering Committee in FY 2005.

Partner Parks and Primary Contacts within the Mid-Atlantic Cooperative			
Park	State	Contact Person	Contact Title
APCO	VA	Brian Eick	Natural Resource Specialist
BOWA	VA	Timothy Sims	Park Ranger
COLO	VA	Charles Raffkind	Natural Resources Manager
FRSP	VA	Gregg Kneipp	Natural Resource Specialist
GETT and EISE	PA / PA	Zachary Bolitho Randy Krichten	Natural Resource Specialist Forestry Technician
GEWA and THST	VA / MD	Rijk Moräwe	Integrated Resources Program Manager
HAMP	MD	Paul Bitzel	Horticulturist
PETE	VA	Dave Shockley Tim Blumenschine	Chief, Resource Management Biologist
RICH	VA	Kristen Allen	Natural Resource Specialist
SHEN	VA	Gordon Olson	Chief, Natural Resources Branch
VAFO	PA	Meghan Carfioli	Acting Natural Resources Specialist

Within the scope of managing exotic vegetation and site restoration, the Mid-Atlantic Cooperative works with its neighbors to control exotics along park boundary areas. This outreach improves the anticipated project success and longevity of treatments by creating extended management buffers and engendering active allies in monitoring for subsequent infestations. To date, three landowners participate as follows.

Figure 4. Table of partnering neighbors within the Mid-Atlantic Cooperative, describing the organizations and individuals participating in exotic plant management along park borders.

Partner Neighbors within the Mid-Atlantic Cooperative			
Partner Neighbor	Adjacent Park	General Location	Targeted Exotic
Colonial Williamsburg Foundation	Colonial National Historic Park	Midway along the Colonial Parkway at the Colonial Williamsburg property	Kudzu, English ivy, tree of heaven
Henry Tobler III	Shenandoah National Park	West side of the Park near US Highway 33	Bamboo
Douglas Workman	Shenandoah National Park	West side of the Park near US Highway 33	Bamboo

Study Area Description

The Mid-Atlantic Cooperative is made up of national park lands within three geographic areas, including the Coastal Plateau, Piedmont, and Ridge & Valley zones. The Coastal and Piedmont zones contain many variants of warm-moist forest types generally described as the Loblolly-Shortleaf Pine forest type (SAF 1980). Hardwoods are very often a large part of the forest composite. Moister sites may contain yellow-poplar, American beech, white ash, sweetgum, red maple, water oak, and willow oak. Drier sites contain pines, sweetgum, blackgum, southern red oak, post oak, white oak, mockernut hickory, and pignut hickory. The Ridge & Valley zone contains the forest type variants contained within the Oak-Hickory and Oak-Pine forest types (SAF 1980) where the latter types are on drier sites due either to poorer soils or lesser annual precipitation. In either case, hardwoods remain a major factor in the forest composite and development. Moister sites contain sweetgum, Eastern hemlock, Eastern white pine, basswood, birches, American beech, flowering dogwood, and northern red oak, among others. Drier sites contain chestnut oak, white oak, Table Mountain pine, and Virginia pine, among others.

Protecting the natural legacy of the region is essential to ensure that future generations of the public enjoy its expanse and native beauty. The Cooperative is within one of the most vigorous and biologically diverse ecological zones in North America. To date, 1,100 native vascular plant species have been documented within Shenandoah National Park alone. Exotic vegetation, on the other hand, threatens to destroy native diversity and ecosystem health, replacing thousands of species with a relatively few aggressive invasives. Within the Mid-Atlantic Cooperative, 15-to-23 percent of the vegetative species are nonnative.

Methods

The Mid-Atlantic Cooperative strategically targets invasive vegetation threatening resources within park lands. The Cooperative controls and monitors exotic infestations in a safe and efficient manner using state-of-the-art approaches, while protecting the environment during operations. Increasing the corporate expertise and involvement of participating park staffs is emphasized so that there is increased likelihood for programmatic sustainability. The goal of site restoration is made an integral part of planning, control, monitoring, and follow-up activities. Public education and outreach is addressed during all phases of work. Outreach through media contacts, park interpretation, school programs, and professional meetings are pursued. Actions that address specific goals follow.

Goal 1 – Assess and prioritize invasive exotic vegetation threats, and compile necessary control protocols. Adaptively update strategic plans at all parks as new information develops.

The intent is to conduct extensive operational reconnaissance to locate invasive epicenters, gain acreage estimates of infestation, and note special concerns sufficient for species prioritization, strategic planning, and post-treatment monitoring. Strategic planning and prioritization is a team effort. Each park adaptively amends their strategic plans and protocols with the assistance of the Team Liaison. Targeting and prioritizing invasive species for treatment is accomplished with a four-phase approach.

Phase 1. Field data of species presence and dominance is coupled with state invasive advisory lists to provide initial winnowing. Though Virginia, Pennsylvania, and Maryland have hundreds of nonnative species, some have been identified as highly invasive and of particular threat to natural settings. Lesser threats are not initially targeted at this time. (See Phase 4 to note how lesser threats may also be treated.)

Phase 2. The NPS *Handbook for Ranking Exotic Plants for Management and Control* (Hiebert & Stubbendieck 1993) is used to correlate potential environmental harm with potential for treatment success. Localized conditions and species presence information is incorporated into the system. A ranked list is created where species with the greatest likelihood for control and greatest potential for negative environmental impacts receive highest priority for treatment.

Phase 3. Species priorities and epicenter information is adjusted for specific natural resource protection and cultural/historical resource concerns. It is essential to strategically target invasive species that threaten federally listed species or significant landscapes, structures and ethnographic resources⁴. It is also essential to note areas that could be damaged by specific vegetation control techniques.

Phase 4. Lastly, priorities are adjusted for operational practicality. For example, though one particular species may be targeted in a particular area, other lesser or unranked exotics will also be treated there to assure that the area is left clean for native restoration. The process composite creates a targeted and prioritized operations list. The following figure summarizes the targeted and prioritized species for participating parks in the Mid-Atlantic Cooperative.

Figure 5. Table of targeted exotic vegetation for parks within the Mid-Atlantic Cooperative, describing the targeted species and their relative priority for each park⁵.

Targeted ⁶ Exotic Species and Relative Priorities ⁷	
Park	Species (Common Names)
APCO ⁸	Princess tree, tree of heaven, multiflora rose, Japanese honeysuckle, Johnson grass, Japanese stiltgrass, Japanese barberry, Chinese wisteria, bull & Canada thistles, crowned vetch, privet, mimosa tree, mulleins, periwinkle, spotted knapweed, chicory
BOWA ⁸	Kudzu, Johnson grass, tree of heaven, Japanese honeysuckle, Japanese stiltgrass, gorse, and multiflora rose
COLO ⁸	Princess tree, tree of heaven, Asian bamboo, privet, Japanese knotweed, Oriental bittersweet, nonnative wisteria, phragmites, kudzu, English ivy, Japanese honeysuckle, Johnson grass, periwinkle, Japanese stiltgrass, multiflora rose, mimosa, wineberry, barberry, gill-over-the-ground, and nonnative thistles

⁴ Significance is designated by inclusion in the National Register or archeological documentation.

⁵ Other exotic plants were also treated incidentally.

⁶ Includes targeted exotics only, not all exotics.

⁷ Relative priority for each park is indicated by the order of listing.

⁸ Contained within approved park strategic plans for managing invasive vegetation.

(Park)	(Species (Common Names))
EISE	Mile-a-minute weed, multiflora rose, tree of heaven, nonnative thistles, Japanese honeysuckle, garlic mustard, autumn olive, teasel, Japanese stiltgrass, crowned vetch. Others to add include: Japanese barberry, privet spp. and mulleins.
FRSP⁸	Multiflora rose, tree of heaven, Japanese honeysuckle, English ivy, periwinkle. Others to add include Japanese knotweed, non-native thistles, mimosa, privet, autumn olive, and Japanese stiltgrass
GETT⁸	Mile-a-minute, Japanese barberry, multiflora rose, Tartarian bush honeysuckle, tree of heaven, autumn olive, Japanese honeysuckle, garlic mustard, teasel, nonnative thistles, Japanese stiltgrass. Others to add include: privet spp. and mulleins.
GEWA⁸	Autumn olive, Phragmites, English ivy, periwinkle, nonnative grasses, multiflora rose, Japanese honeysuckle, giant mullein. Others to add include Chinese lespedeza, garlic mustard, nonnative thistle, Japanese stiltgrass, barberry, spotted knapweed, gorse, and wisteria
HAMP⁹	Mile-a-minute, bush honeysuckle, multiflora rose, wineberry, Japanese honeysuckle, English ivy, garlic mustard, periwinkle, gill-over-the-ground, and Norway maple
PETE⁸	Tree of heaven, Johnson grass, privet, Japanese stiltgrass, Japanese honeysuckle, mimosa, Chinese lespedeza, multiflora rose, and periwinkle
RICH⁸	Tree of heaven, privet, mimosa, Japanese honeysuckle, Oriental bittersweet, princess tree, English ivy, Johnson grass, Japanese stiltgrass, and multiflora rose
SHEN⁹	Mile-a-minute vine, kudzu, Oriental bittersweet, Japanese knotweed, bamboo, Johnsongrass, princess tree, tree of heaven, mulleins, and Oriental lady's thumb
THST	Mile-a-minute vine, tree of heaven, multiflora rose, wineberry, Japanese honeysuckle, Japanese stiltgrass, and mulleins
VAFO⁹	Oriental bittersweet, bush honeysuckles, privets, barberry, multiflora rose, tree of heaven, princess tree, mile-a-minute, Japanese honeysuckle, stiltgrass, and mulleins

All programmatic or project-specific plans meet National Environmental Policy Act and National Historic Preservation Act standards. Park personnel conduct the compliance process with the assistance of the Team Liaison and Northeast Region staff.

Goal 2 – Control targeted exotic populations at all parks.

The Cooperative has an annual target of 225 treatment/retreatment acres. Best management practices are followed for treatments and follow-up. Those practices were garnered from local experience, the counsel of professional experts, and appropriate species-specific documentation in print and on the worldwide web. The Team and parks cooperate in control work to increase on-the-ground outputs and ensure the transfer of knowledge and techniques takes place. All procedures are compatible with NPS directives and federal & state laws.

Collaboration with park neighbors to jointly control common exotic problems continues. This greatly improves the success potential of our efforts by increasing the area of influence and management.

The Cooperative conducts treatment site monitoring at least annually to evaluate treatment effectiveness, refine and adjust treatment strategies, and determine exotic species' status and trends.

Park staffs are trained on-the-ground in aspects of monitoring protocols, species identification, and vegetation control technologies. Risk management and safety are incorporated throughout.

⁹ Contained within approved park project clearance documentation.

Daily tailgate safety sessions and periodical Safety Plan reviews encourage safe operations and identify and resolve other risk management issues (i.e., hazardous materials management, sustainability, being environmentally “green,” etc.). Risk avoidance is everyone’s concern. To ensure that “everyone’s concern” does not mean “no one’s,” the Crew Leader has the prime responsibility.

Permanent Team crew members possess pesticide applicator certifications at each of the states in the Cooperative. Seasonal and individual SCA team members possess applicator certification for the Commonwealth of Virginia only. Periodical updates of knowledge is provided through formal state sanctioned training and on-the-job instruction.

Goal 3 – Assess treated sites for further restoration needs. Implement prescribed fire and other management methods in an integrated fashion where needed and appropriate. Monitor exotics control and restoration actions.

The goal of exotic vegetation management is not solely to control nonnatives. It is to create conditions that allow for healthy functioning native ecosystems. Much of the eastern forest type is well suited to regenerate itself following natural disturbance such as wildfire, windstorm and the like. The removal of invasive vegetation mimics such an occurrence. In general, native plantings are not needed where affected areas are (1) free of subsequent invasive reinfestation, (2) smaller than ¼-acre, (3) not broadly exposed to weather/climatic elements, and (4) not involving soil compaction or environmental poisoning (i.e., mine spoils, and oil, fuel and other chemical spills). Resident or adjacent natives are well able to recolonize such sites without intervention. On the other hand, it is necessary, in some cases, to plant fast growing native vegetation to ensure that invasives do not recapture the site. The need for site restoration subsequent to invasive controls is evaluated on a case-by-case basis to determine appropriate follow-up treatments. Virginia, Pennsylvania and Maryland native planting guides are used for appropriate species applications. *Regionally* native seed stock has been used initially, but use of seed stock that is native to the *parks* in question will be the goal of the Cooperative within a five-year period. Obtaining such seed stock will be done through volunteer and/or contracted programs of seed procurement and nursery operations. The Team works along side park staff members to plan and initiate the process of restoration. It is estimated that 10%-to-30% of treated areas will need restoration treatments through a 5-year period.

A treatment monitoring protocol (NPS 2003a) is used that is functionally simple and adaptable to fit various shaped and sized units. Results of monitoring provide information regarding invasives’ presence, native species regeneration and forest development.

Associated members of the Mid-Atlantic EPMT are the Fire Management Officer and Fire Ecologist stationed at Shenandoah National Park. They serve parks in a sub-regional organization called the “Mountains to the Sea.” Two-way communications between the Mid-Atlantic EPMT Liaison and the fire organization are needed for effective planning and coordination. Note the following figure that illustrates the organization and lines of communications. There are many situations where prescribed fire use is advantageous to (1) kill certain invasives outright or weaken them for better effectiveness of other measures; (2) expend the seed bank of prolific invasive seeders; (3) clear sites of vegetative mass and make it possible for subsequent mechanical or herbicide applications and site restoration activities; or (4) improve soil nutrition for subsequent vegetative growth. National fire funding may be available to plan and conduct such site restoration burns.

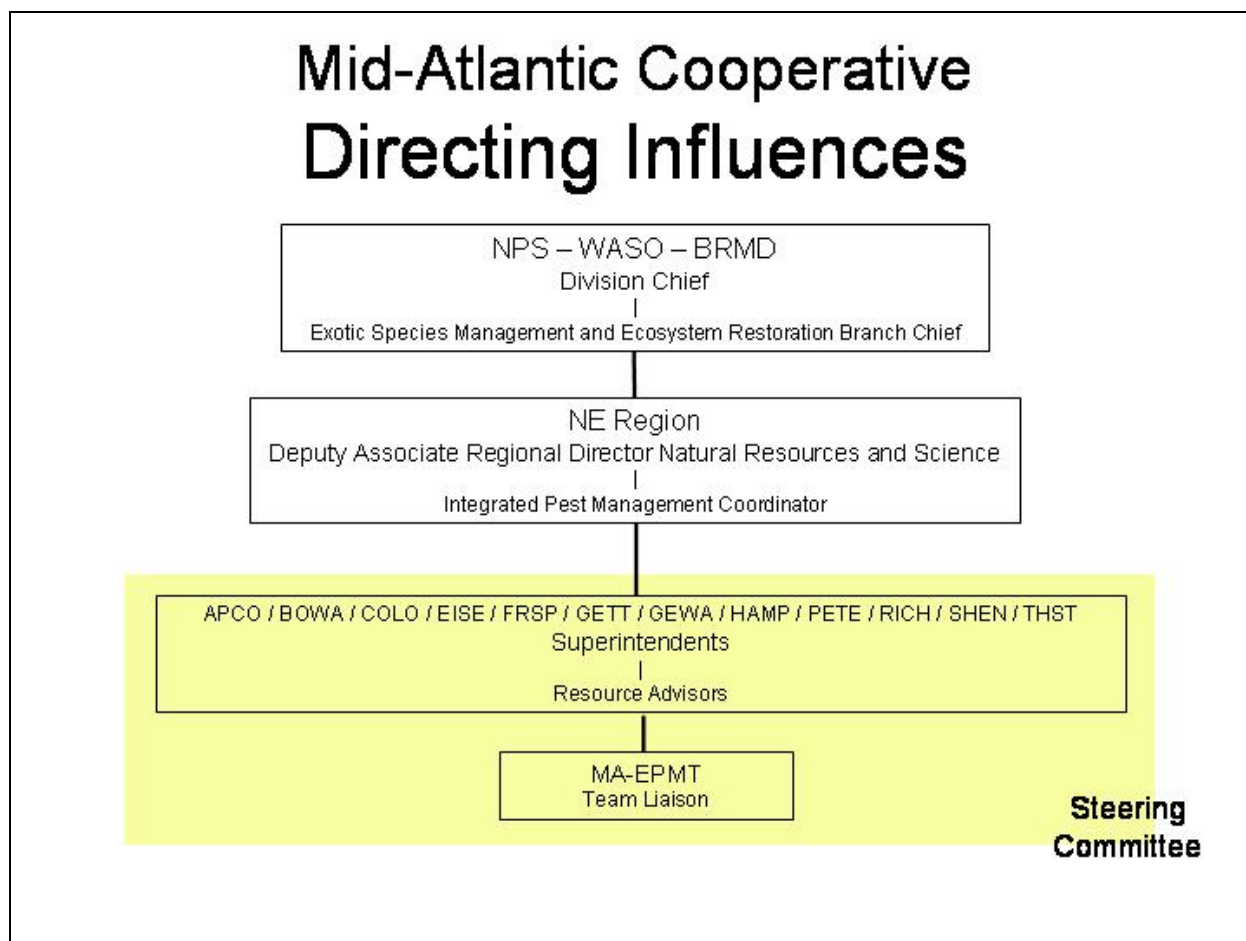


Figure 6. Chart illustrating the directing influences for operations of the Mid-Atlantic Exotic Plant Management Team and Cooperative through FY 2005.

Goal 4 – Maintain a cohesive and cooperative effort within the Cooperative that trains and benefits from individual park expertise. Develop collaborative ventures with outside agencies and landowners to control exotics and restore ecosystems on a broad scale.

The programmatic intent is to create a program that is bigger than its parts. The following actions assure that support and momentum are present to promote success.

- Work integrally with park and Fire staffs in all phases as appropriate (i.e., park priority setting & review, species identification, site survey and documentation, treatment implementation, monitoring & evaluation, site restoration planning and implementation, and annual program evaluations).
- Ensure on-going and effective transfer of knowledge and procedures.
- Create optimal infrastructure and functionality, within funding constraints, needed to efficiently assess and control invasive exotics.
- Demonstrate real on-the-ground accomplishments.
- Interpret the story of invasive vegetation issues and control accomplishments at each park unit with inexpensive media tools, media contacts, and public outreach.

Results

This was the third year of ONPS base-funded operations continuing from an earlier NPS NRPP project effort, begun in FY 2000. The team members and Liaison helped parks to update their species and site priorities for exotic plant treatment. Plant species listed in Figure 3 indicate the wide composite span of targeted exotic species. A common threat is the group of highly invasive vines, such as mile-a-minute, kudzu, Oriental bittersweet and Japanese honeysuckle. Other common targeted exotics include tree of heaven, autumn olive, Japanese barberry, multiflora rose, privets, Phragmites reed, and Japanese stiltgrass.

Notable Achievements

The Mid-Atlantic Cooperative completed field inventories on **9,061** acres and exotic vegetation treatments/retreatments at all **13** parks. There were **37** species treated during the year. The treatment/retreatment goal of 225 acres was surpassed, where 388 treated acres plus 61 retreated acres totaled **449** acres. (See Figure 5.) Contributing to the achievements was the increased funds availability through: (1) NPS- BRMD for a shared SCA Team; (2) NRPP for work specific to Valley Forge NHP; and (3) MA-EPMT funds carried over from FY 2004 into the private sector contract. Even without those funds, the Team achieved the annual goal with **226** acres.

The Cooperative's private sector contractor (Invasive Plant Control, Inc.) completed 1,857 acres of inventories and 172 acres of exotic controls (part of the total). The Cooperative's SCA Exotic Plant Team completed 266 acres of inventories and 51 acres of exotic controls (part of the total).

The team completed retreatments of the cooperative bamboo control project at Shenandoah National Park with two park neighbors where all parties contributed to the overall 0.23-acre eradication effort.

Permanent team members maintained state certification to apply herbicides within the Commonwealth of Virginia¹⁰, Maryland, and Pennsylvania. Temporary employees and student interns obtained state certification for the Commonwealth of Virginia. The Team Liaison maintained state certification in all three states plus West Virginia.

The Team Liaison led an effort at Shenandoah National Park to initiate a program of short-term volunteer assistance in exotic plant control. A database was created and populated of available volunteers and potential participating organizations. Groups such as schools, universities, clubs, and professional organizations were included. The database contained 156 records by fiscal year end. From it, short-term volunteer events are being planned for FY 2006.

The Team Liaison participated on the Commonwealth of Virginia Invasive Species Advisory Committee where their task is to draft a statewide strategic exotic species plan. The first complete draft was circulated for review comments in August 2005.

The Team minimized lost time due to accidents (-0- hours) by implementing a well executed and documented safety program with daily safety discussions (NPS 2004b).

¹⁰ Certification is generally required only of the Team Liaison or Crew Leader. Having all crew members become certified indicates the organization's high degree of interest in risk management and personnel safety.

The Cooperative expanded its functional capacity by utilizing individual SCA interns, a SCA Exotic Plant Team, park volunteers, and utilizing a private sector contract – all with excellent success.

Submitted a draft FY 2006 Work Plan to all Mid-Atlantic Cooperative Steering Committee for review and finalization in September 2005 (NPS 2005).

The Team increased public awareness of invasive species issues by the following. (Refer to the appendix for detail.)

- Participating in six newspaper and magazine articles
- Publishing five articles in professional conferences and newsletters
- Releasing nine fact sheets and activity reports and four project activity notices, and
- Speaking at ten public or professional meetings.

Figure 7. Table of Mid-Atlantic Exotic Plant Management Team accomplishments for Fiscal Year 2005, summarizing the exotic vegetation management activity.

Mid-Atlantic EPMT Fiscal Year 2005 Accomplishments		
Work Category	Parks	Acres
Inventoried	13 of 13	9,061
Treated	13 of 13	388
Monitored	12 of 13	822
Retreated	12 of 13	61
Controlled species	7 of 13	398
Restored area	None	0
GPRA goal: 225 acres	Achieved: 449 acres	

Discussion

The Mid-Atlantic Cooperative is within a biologically diverse and highly productive region spanning the coastal plains of Chesapeake Bay, Piedmont, and Ridge & Valley zone of the Blue Ridge Mountains. Few areas have greater biological diversity. Protecting the natural and cultural legacy of the region is essential to assure that future generations enjoy its expanse and beauty. The Mid-Atlantic EPMT is an excellent organizational foundation for preserving and protecting our natural and cultural resources. Unfortunately, most parks have lost ground financially and increasingly rely solely on the Mid-Atlantic EPMT for their exotics control program instead of being able to participate on the ground. This will eventually decrease the annual progress in treating high priority invasive species. It will also tend to decrease corporate knowledge of the program due to lack of active participation.

On the brighter side, parks are making progress toward achieving a maintenance level of exotic plant management need. That status is achieved when monitoring and treatments are needed on a less than annual basis without outside funding assistance. Organizationally, building supportive programs to increase short-term volunteer participation in exotic plant management and improve public awareness of surrounding issues will help slow down the programmatic losses due to budgetary short-falls.

The nationally funded Mid-Atlantic EPMT is a continuation of efforts begun in FY 2000 when, through NPS Natural Resource Protection Program project funding, a smaller Virginia Invasive Vegetation Management Team and its cooperative of parks was begun. The momentum and expertise garnered during the period 2000-2002 became an essential part in helping the Mid-Atlantic Cooperative thrive in its first years of expanded operations.

In spite of budget problems, on-the-ground participation of park staffs and volunteers has increased for the most part since the early beginnings. Transfer of knowledge continues for all involved, helping expand the corporate knowledge of program intent and activity. Invasive exotic plants are being controlled in a strategic fashion that provides for long-lasting protection that will leave park resources unimpaired for future generations.

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Appendices

Outreach: Reports, Professional Meetings, Presentations, Interviews of FY 2005

Reports and Publications

- Åkerson, James. 2005. *Shenandoah National Park Abandoned Historical Developments Exotic Vegetation Survey: Annual Report for FY 2004*. Shenandoah National Park, Luray, VA. 19 pp.
- Åkerson, James. 2005. "Tackling Exotic Plants as a Team – Cooperate, Collaborate, Contract" in *People, Places, and Parks: Proceedings of the 2005 George Wright Society Conference on Parks, Protected Areas, and Cultural Sites* (in draft); March 14-18, 2005, Philadelphia, PA. David Harmon, general ed. The George Wright Society, Hancock, Michigan.
- Åkerson, James. 2005. "Prioritize Your Exotic Plant Battles – Get Focused" in *People, Places, and Parks: Proceedings of the 2005 George Wright Society Conference on Parks, Protected Areas, and Cultural Sites* (in draft); March 14-18, 2005, Philadelphia, PA. David Harmon, general ed. The George Wright Society, Hancock, Michigan.
- Åkerson, James. 2004. *Exotic Vegetation Management: Mid-Atlantic Exotic Plant Management Team: Annual Report for Fiscal Year 2004*. November 24, 2004. NPS-BRMD, Mid-Atlantic EPMT, Luray, VA. 16 pp.
- Åkerson, James. 2004. *Shenandoah National Park Exotic Vegetation Management Program: Annual Report for FY 2004*. December 2004. Shenandoah National Park, Luray, VA. 15 pp.
- NPS. 2004a. *The Mid-Atlantic Exotic Plant Management Team (MA-EPMT): Work Plan for FY 2005, October 2004*. NPS-Biological Resources Management Division, Mid-Atlantic Exotic Plant Management Team, Luray, VA. 23 pp.
- Shenandoah National Park. 2005. *Invasive Non-Native Tree Management Along Skyline Drive*; activity notice, April 18, 2005. Shenandoah National Park, Luray, VA. 2 pp.
- Shenandoah National Park. 2005. *Continued Eradication Efforts -- Invasive Mile-a-minute Vine*; activity notice, May 3, 2005. Shenandoah National Park, Luray, VA. 2 pp.
- Shenandoah National Park. 2005. *Exotic Plant Control Team Serves Shenandoah*; fact sheet, May 3, 2005. Shenandoah National Park, Luray, VA. 2 pp.
- Shenandoah National Park. 2005. *Continue Limberlost Exotic Plant Control*; activity notice, August 3, 2005. Shenandoah National Park, Luray, VA. 2 pp.
- Shenandoah National Park. 2005. *Exotic Plant Control Along Skyline Drive*; activity notice, September 21, 2005. Shenandoah National Park, Luray, VA. 2 pp.
- Shenandoah National Park. 2004. *Streams and Riparian Zones: Areas of Focus for Invasive Exotic Plant Control*; fact sheet for the Shenandoah Watershed Study Program conference poster session in Charlottesville, VA, October 4, 2004. Shenandoah National Park, Luray, VA. 1 pp.

Presentations:

1. Åkerson, James. 2004. Presentation on exotic plant inventory and management including field trip facilitation for the Society of American Foresters, Skyline Chapter, at Shenandoah National Park, 10/7/04. Shenandoah National Park, Luray, VA.
2. Åkerson, James. 2004. Presentation on exotic plant inventory and management for the Society of American Foresters, Rappahannock Chapter, at Tappahannock, VA, 10/21/04. Shenandoah National Park, Luray, VA.
3. Åkerson, James. 2004-05. Teaching/coaching at Luray Elementary School in preparation for the 2005 Science Olympiad; several occasions during October 2004 – February 2005.

4. Åkerson, James. 2004. Presentation on exotic species inventory and management for the University of Richmond ecology class at Shenandoah National Park, 11/6/04. Shenandoah National Park, Luray, VA.
5. Åkerson, James. 2004. Presentation on exotic species inventory and management to Federal NEPA policy experts at Patuxent NWR, MD, 11/17/04. Shenandoah National Park, Luray, VA.
6. Åkerson, James. 2005. Presentation on exotic plant inventory and management to the Massanutten Lions Club at the Massanutten Property Owners Association office, 3/1/05. Shenandoah National Park, Luray, VA.
7. Åkerson, James. 2005. "Allies, Coalitions and Friends in the War on Exotics" at the George Wright Society Conference, Philadelphia, PA, 3/16/05.
8. Åkerson, James. 2005. "Prioritize Your Battles with Exotic Plants" at the George Wright Society Conference, Philadelphia, PA, 3/18/05.
9. Åkerson, James. 2005. Presentation on exotic plant inventory and management to the Blue Ridge Committee at Big Meadows Lodge, 5/19/05. Shenandoah National Park, Luray, VA.
10. Åkerson, James. 2005. Presentation on exotic species inventory and management to the Virginia Native Plant Society, Shenandoah Chapter, at Blue Ridge Community College, 9/8/05. Shenandoah National Park, Luray, VA.

Media Interviews

1. Åkerson, James. 2004. On-site interview and field trip on exotic plant inventory and management with J. Casale, reporter, for the Harrisonburg *Daily News Record* newspaper, 10/22/04. Shenandoah National Park, Luray, VA.
2. Åkerson, James. 2004. Telephone interview on exotic species inventory and management with S. Fretwell, reporter for the South Carolina *Star* newspaper, 11/30/04. Shenandoah National Park, Luray, VA.
3. Åkerson, James. 2005. On-site interview and field trip on exotic plant inventory and management with S. Rice, reporter for the *Northern Virginia Daily Newspaper* at Limberlost, 7/19/05. Shenandoah National Park, Luray, VA.
4. SCA Exotic Plant Management Team. 2005. Interview of the SCA Team (assigned to the Mid-Atlantic and National Capital EPMTs) on exotic plant control with Rusty Dennen, reporter for *The Free Lance-Star* newspaper in the field at Fredericksburg and Manassas, prior to 8/4/2005. The Student Conservation Association, Charlestown, NH.
5. Åkerson, James. 2005. Telephone interview on exotic species inventory and management with E. Hunter, reporter for the *Blue Ridge Country* magazine, 8/11/05. Shenandoah National Park, Luray, VA.
6. Åkerson, James. 2005. Telephone interview on exotic plant inventory and management with J. Beard, reporter for the Staunton *News Leader* newspaper, 9/8/05. Shenandoah National Park, Luray, VA.

Safety Management

1. Updated the Mid-Atlantic EPMT *Safety Plan*.
2. Updated the Shenandoah National Park Exotic Plant Management *Safety Plan*.
3. Updated the safety discussion tool titled, "Summary of Cautions & Recommended PPE for Herbicide Safety."
4. Maintained a log of embedded tick bites by the field team for safety discussions and documentation.
5. Conducted pesticide inventory at storehouse, 3/31/05; ensured that all herbicide product MSDS (and labels) were in place for the products.

6. Forwarded the national Center for Disease Control publication on tick avoidance to MA-EPMT team members, 5/24/05, and discussed avoidance protocols.
7. Forwarded a safety bulletin on sunburn to all staff, 7/8/05, and discussed appropriate actions.
8. All permanent team members maintained pesticide applicator certification in all states we serve. Seasonal members obtained Virginia certification only for basic safety training.

Training

Administration

1. Web-based federal credit card use training for staff (@1 hour), self-paced; Hughes and Overstreet.
2. Web-based IT Awareness training (2 hours each), March-July 2005; Åkerson, Hughes, Forder, Meyerhoeffer, Jensen, Overstreet, Finke, Huntley, Butti, Brown, and Carson.
3. Web-based "Discrimination and Whistleblowing at the Work Place (2 hour each) June-July 2005; Åkerson, Hughes, Forder, Meyerhoeffer, Jensen, Overstreet, Butti, Brown, Finke, Huntley, and Carson.

Personnel

1. New personnel performance Appraisal system, TELNPS, 11/23/04 (2-1/2 hours); Åkerson.
2. Web-based Performance Management System, DOI online University, December 2004-February 2005 (1 hour each); Åkerson, Hughes, Forder, Meyerhoeffer, and Jensen.
3. Provided opportunity for STEP seasonal employee to meet Northeast Regional Director Mary Bomar in Philadelphia, PA, 7/21-22/05; Brown.

Safety / Risk Management

1. Annual wildfire safety refresher (@8 hours), various sessions February-May 2005; Åkerson, Forder, Meyerhoeffer, and Jensen.
2. Job Hazard Analysis (JHA) process, TelNPS, 1/10/05 (1-1/2 hours); Åkerson.
3. Orientation and safety training (8 hours each); in three separate sessions during June and July 2005 for all full-time seasonal employees, SCA interns, and volunteers.
4. In-house safety training provided seasonal employees, SCA interns, and volunteers to allow them to safely apply herbicides in context of exotic vegetation control program and qualify them to sit for the Commonwealth of Virginia pesticide applicator exam for state certification.
5. HAACP training in Las Vegas, NV (8 hours each), 4/26/05; Åkerson and Forder.
6. ICS training in Las Vegas, NV (4 hours each), 4/28/05; Åkerson and Forder.
7. Pesticide user training in Leesburg, VA (8 hours each), 6/23/05; Åkerson and Meyerhoeffer.
8. DVD recording of NPSafe teleconference 9/20/05 (1 hour); Åkerson.

General Competency

1. NEPA/NHPA refresher training, @SHEN, 12/1/04 (2-1/2 hours); Åkerson
2. National Park Foundation/Tauck Foundation orientation on grant funding for the Volunteer Innovation Program, San Francisco, 3/21-24/05; Åkerson
3. APCAM/GPS/GIS training in Luray, VA, 4/5-7/05 (30 hours each) by Ft. Collins staff; Åkerson, Forder, Jensen, Meyerhoeffer.
4. Web-based Contracting Officer Representative refresher training (3-1/2 hours), 5/31/05; Åkerson
5. GPS field training 8/22/05 (2 hours each); Carson and Huntley.

Mid-Atlantic Exotic Plant Management Cooperative Working Circle

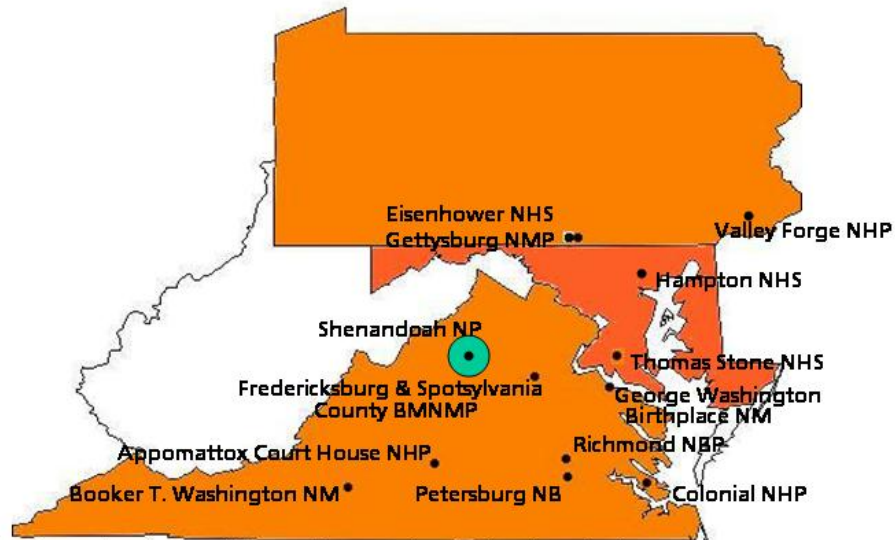


Figure 8. Map indicating the participating parks of the Mid-Atlantic Cooperative, FY 2005.



Figure 9. Group photograph of the FY 2005 Mid-Atlantic EPMT. From left-to-right are Dale Meyerhoeffer, Kate Jensen, Norman Forder, Kirill Kashin (Russian, SCA intern), Matthew Overstreet (seasonal), and James Åkerson.

Figure 11. Table of annual Mid-Atlantic EPMT programmatic accomplishments and expenditures for GPRA reporting, FY 2005.

GRPA Results -- FY 2005

Accomplished by Mid-Atlantic EPMT Staff & Cooperators

ACRES				--- EPMT ---			--- IPC, Inc. ---			--- SCA Team ---		
--- TOTAL ---												
PARK	TREATED	RETREATED	TOTAL	TREATED	RETREATED	TOTAL	TREATED	RETREATED	TOTAL	TREATED	RETREATED	TOTAL
APCO*	12.4	1.6	14	12.4	1.6	14	0	0	0	0	0	0
BOWA*	2	0.4	2.4	2	0.4	2.4	0	0	0	0	0	0
COLO	24	5.2	29.2	24	5.2	29.2	0	0	0	0	0	0
EISE*	5.2	10.9	16.1	5.2	10.9	15.8	0	0	0	0	0	0
FRSP*	46.7	22.2	68.9	21	13.6	34.6	0	0	0	25.7	8.6	34.3
GETT*	30.2	0.9	31.1	22.2	0.9	23.1	7.6	0	7.6	0	0	0
GEWA*	6.7	4.3	11	6.7	4.3	11	0	0	0	0	0	0
HAMP	0.5	0.8	1.3	0.5	0.8	1.3	0	0	0	0	0	0
PETE*	15	3.5	18.5	11.5	3.4	14.9	0	0	0	3.5	0.1	3.6
RICH*	34.3	0.4	34.7	21.9	0.4	22.3	0	0	0	12.4	0	12.4
SHEN*	41.1	5.1	46.2	41.1	3.5	64.2	0	1.6	1.6	0	0	0
THST	0.5	5.9	6.4	0.5	5.9	6.4	0	0	0	0	0	0
VAFO*	169.5	0	169.5	7	0	7	162.5	0	162.5	0	0	0
TOTAL	388.1	59.6	447.7	164	49.3	232.2	170.1	1.6	171.7	41.6	8.7	50.3

VALUE

Park	EPMT Person Days	Percent Total	EPMT Value	IPC, Inc. Cost	SCA Team Value	Total Expended
APCO	64	7.1%	\$ 21,149	\$ -	\$ -	\$ 21,149
BOWA	23	2.6%	\$ 7,649	\$ -	\$ -	\$ 7,649
COLO	63	7.0%	\$ 20,820	\$ -	\$ -	\$ 20,820
EISE	31	3.5%	\$ 10,283	\$ -	\$ -	\$ 10,283
FRSP	76	8.5%	\$ 25,100	\$ -	\$ 12,054	\$ 37,154
GETT	51	5.7%	\$ 16,869	\$ 5,940	\$ -	\$ 22,809
GEWA	51	5.7%	\$ 16,869	\$ -	\$ -	\$ 16,869
HAMP	29	3.2%	\$ 9,625	\$ -	\$ -	\$ 9,625
PETE	71	7.9%	\$ 23,454	\$ -	\$ 5,304	\$ 28,758
RICH	63	7.0%	\$ 20,820	\$ -	\$ 5,304	\$ 26,124
SHEN	152	16.9%	\$ 50,125	\$ 1,881	\$ -	\$ 52,006
THST	31	3.5%	\$ 10,283	\$ -	\$ -	\$ 10,283
VAFO	22	2.5%	\$ 7,320	\$ 116,262	\$ -	\$ 123,582
TOTALS	730	80.9%	\$ 240,366	\$ 124,083	\$ 22,662	\$ 387,110

FTE

EPMT FTE*	IPC FTE**	SCA FTE**	Total FTE
0.31	0	0	0.31
0.11	0	0	0.11
0.30	0	0	0.30
0.15	0	0	0.15
0.37	0	0.22	0.59
0.25	0.01	0	0.26
0.25	0	0	0.25
0.14	0	0	0.14
0.34	0	0.13	0.47
0.30	0	0.16	0.47
0.73	0.05	0	0.78
0.15	0	0	0.15
0.11	0.34	0	0.45
3.51	0.40	0.51	4.42

SCA supplies	0	0.0%	\$ -	\$ -	\$ 2,390	\$ 2,390
Data/equip	70	7.8%	\$ 23,049	\$ -	\$ 261	\$ 23,310
GeoWrightSoc	8	0.9%	\$ 2,634	\$ -	\$ -	\$ 2,634
Holidays&Leave	94	10.4%	\$ 30,951	\$ -	\$ 1,688	\$ 32,639
TOTALS	172	19.1%	\$ 56,634	\$ -	\$ 4,339	\$ 60,973
GRAND TOTALS	902	100.0%	\$ 297,000	\$ 124,083	\$ 27,000	\$ 448,083

0.00	0	0	0.00
0.34	0	0	0.34
0.04	0	0	0.04
0.45	0	0	0.45
0.83	0	0	0.83
4.34	0.40	0.51	5.25