

GYA-WIDE AQUATIC NUISANCE SPECIES IMPLEMENTATION PLAN

GYA-Wide ANS Strategy Goal #1: Prevent new introductions of ANS into waters of the GYA.

Objective: Develop a public (externally) that understands their role in ANS prevention

- *Teach people to clean, inspect, dry*
 - *Educational workshops*
 - *One-on-one contact with water users*
 - *School outreach*
 - *Integrate ANS outreach internally into the workplace.*
- *Develop a marketing campaign that is consistent throughout the GYA*
 - *Develop an ANS reporting system*
- *Encourage the development of ANS-free certification programs that helps the public understand their role*

Objective: Develop an agency/organization understanding of ANS prevention

- *Institutionalize behaviors and procedures that reduce potential for spread, regardless of survey knowledge*
- *Define and incorporate Best Management Practices into management actions*
- *Identify opportunities to incorporate ANS management into agency/organization decision-making and plans.*

Objective: Identify and interrupt pathways of introduction

- *Identify and manage key ANS vector routes*
- *Encourage the development of ANS-free certification programs*
- *Develop a strategic network of cleaning/treatment infrastructure*
- *Develop standard cleaning protocols*
- *Develop a network of ANS experts*
 - *Train resource professionals to identify ANS in the field*
 - *Identify reference experts for advanced identification of ANS*
- *Identify and develop consistent inspection protocols*

Objective: Identify and implement changes in authorities and procedures

- *Survey and document existing laws, regulations, and policies*
- *Identify weaknesses, inconsistencies, or absences in authorities and procedures*
- *Support and/or implement solutions that address the needs identified*

Introduction

Focusing efforts on education, integrated management, introduction pathways, and overall authorities and procedures will be critical in preventing ANS from establishment in the GYA. There are many components to preventing ANS in the GYA and each is inter-related and dependent on the other in order to sustain our healthy watersheds. Given

that the main method of transporting ANS is through human use, the success of our entire strategic plan rests on the success of our outreach efforts to engage the public through active participation in prevention efforts. In order to achieve this participation, we must understand the issue as managers and stewards of the watershed and engage our own organizations and agencies in productive decision-making. To prevent ANS we must understand the pathways of introduction so that we may better direct our management efforts. Ultimately we need to have sufficient authorities and procedures in place to implement each of the required components.

This portion of the implementation plan defines how we will increase awareness and participation in prevention efforts, integrate efforts into ongoing management and conservation work, interrupt of introduction pathways, and integrate ANS prevention into laws, authorities and procedures. Associated benefits from this portion of the implementation plan include a public with a greater understanding of what the ANS issue encompasses, a more focused and effective management and organization segment, and effective laws and policies to implement plans.

Develop a public (externally) that understands their role in ANS prevention: The success of the ANS Program, locally, regionally, nationally, and internationally depends upon the public. There is a need to foster understanding of the threat that ANS poses to them and their role in its prevention and control. There is a need to teach people to inspect/clean/dry, develop consistent social and product marketing plans throughout the GYA, and develop an ANS-free certification program.

Teach people to inspect, clean, dry: Educational Workshops

Task	Responsible Party	Deliverable Due	Approx Cost
Contact local community partners and set up a calendar of events to engage the public. Include field workshops.	GYA-Wide ANS Team	September 2009	20 events x 10 Professional hours/event x \$35/hr = \$7,000
Integrate ANS education into already ongoing community programs (ex: AMK talks, Wildlife Art Museum series, local library events)	GYA-Wide ANS Team	March 2010	40 opportunities x 4 hours x \$35/hr Professional hours = \$5,600

Teach people to inspect, clean, dry: One-on-One Contact

Task	Responsible Party	Deliverable Due	Approx Cost
Set up a coordinated effort between partners to provide sufficient seasonal staffing for outreach throughout the GYA	GYA-Wide ANS Team	September 2009	10 seasonals 1 /unit 700 hours each x \$20/hr =140,000

Consider other organizations and businesses to partner with for sufficient on-the-ground education	GYA-Wide ANS Team	September 2009	30 Professional Staff days x 10 hours x \$35/hr = \$10,500
Organize and coordinate seasonal training for ANS employees	GYA-Wide ANS Team	September 2009	4 locations x 2 Professional Staff x 10 hours x \$35/hour = \$2,800
Develop and distribute visitor questionnaire for seasonal crews to use during contact with public. Ensure it is applicable to the entire GYA.	GYA-Wide ANS Team	September 2009	1 seasonal 700 hrs x \$20/hr = \$14,000 1 Volunteer 700 hours x \$15/hr = \$10,500
Search for grant opportunities and other more lasting ways to fund seasonal staff	GYA ANS Team	March 2010	20 Professional Staff days x 10 hours x \$35/hr = \$7,000
Interview/survey visitors for effectiveness of prevention program and adjust efforts to match responses to questionnaires/surveys	GYA ANS Team	March 2010	Seasonals included above. \$1500 to develop surveys

Teach people to inspect, clean, dry: School Outreach

Task	Responsible Party	Deliverable Due	Approx Cost
Set up partnerships with local schools to establish outreach in schools	GYA ANS Team	September 2009	20 Professional Staff days x 10 hours x \$35/hr = \$7,000
Search for existing lesson plans for teaching about ANS. If they are insufficient, create GYA ANS Lesson Plans.	GYA ANS Team	September 2009	2 weeks Consultant 80 hours x \$50/hr = \$4,000
Set up workshop with GYA teachers who want to teach about ANS	GYA ANS Team	March 2010	One time cost \$5,000

Teach people to inspect, clean, dry: Community Outreach

Task	Responsible Party	Deliverable Due	Approx Cost
Consider setting up community-based ANS events for various GYA communities. If doable, pursue.	GYA ANS Team	September 2009	Part of educational workshops above
Identify appropriate forums to present ANS issues to agricultural groups and use them to increase their awareness of their economic threats	GYA ANS Team	September 2009	Part of educational workshops above

Teach people to inspect, clean, dry: Integrate ANS Outreach into the Workplace

Task	Responsible Party	Deliverable Due	Approx Cost
Meet with public affairs personnel, executive directors, etc. to determine routes for outreach in organizations and agencies	GYA ANS Team	September 2009	10 units x 5 hrs /unit x \$35/hr = \$1,750
Create tools for outreach to co-workers and members such as power points for meetings, intranet write-ups, etc.	GYA ANS Team	Ongoing	20 Professional Staff days x 10 hours x \$35/hr = \$7,000
Stock offices and front desk areas with ANS marketing materials	GYA ANS Team	Ongoing	Negligible
Hold brown-bag lunches featuring ANS information and take co-workers and members on float trips to explain ANS issue	GYA ANS Team	Ongoing	Negligible
Provide basic ANS cleaning tools to be "checked out" by employees and members at front desks	GYA ANS Team	Ongoing	\$100/unit x 10 = \$1,000

Teach people to inspect, clean, dry: Coordination of seasonal staffing for efficient coverage

Task	Responsible Party	Deliverable Due	Approx Cost
Set up an organized communication channel to share efforts so not over-lapping (do this via a website, google groups, etc.) Partners from each area meet in the spring to plan coordination for summer season	GYA ANS Team	Annually	Part of ongoing GYA group coordination 10 units x 10 professional hours \$35/hr = \$3,500
Be creative in providing staffing; think about internships, volunteer support, service projects	GYA ANS Team	On Going	Covered within other areas

Develop effective product and social marketing plans and campaigns that are consistent throughout the GYA

Task	Responsible Party	Deliverable Due	Approx Cost
Develop product marketing plan	GYA ANS Team and business council consisting of representatives of GYA business community and consider assistance from a business marketing college intern.	March 2010	3 Professional staff for 40 hours each @ \$35/hr = \$4,200 Consultant 80 hours @ \$50/hr = \$4,000 Total = \$8,200
Use contact survey to collect data necessary for the development of a social marketing plan. Develop plan	GYA ANS Team and social marketing specialists	March 2010	Data entry 80 hours @ \$20/hr = \$1,600
Establish relationships with visitor centers, chambers of commerce and other “marketing focal points”	GYA ANS Team	Ongoing	Covered within other areas and activities

Encourage the development of ANS-free certification programs that helps the public understand their role

Task	Responsible Party	Deliverable Due	Approx Cost
Search and evaluate ongoing certification	GYA ANS Team	March 2010	Negligible

programs and consider using existing program or develop GYA program			
Incorporate education and self certification program with boat inspections and wash stations to facilitate interstate boat travel	GYA ANS Team	March 2010	Negligible adopt other protocols

Develop an agency/organization understanding of ANS prevention: There is also a need to foster understanding and support within agencies and organizations. This can be done by institutionalizing behaviors and procedures that reduce the potential for ANS spread, regardless of survey knowledge, defining and incorporating Best Management Practices into management actions, and identifying opportunities to incorporate ANS management into agency/organization decision-making and plans.

Institutionalize behaviors and procedures that reduce potential for spread, regardless of survey knowledge

Task	Responsible Party	Deliverable Due	Approx Cost
Each individual within the GYA should begin talking to their coworkers, supervisors, etc. and emphasize the importance of ANS Provide information on prevention and species identification	GYA ANS Team	On going	Negligible Covered under other items above
Distribute ANS literature and studies among employees and supervisors.	GYA ANS Team	ongoing	Covered under other items above
Consider establishing a Spring workshop regarding the importance of ANS and ANS identification. Include employees outside water resources, including fire, wardens, rangers, contractors, etc.	GYA ANS Team	Annual	4 locations x 2 Professional Staff x 10 hours x \$35/hour = \$2,800
Develop a universal outreach sign for the GYA that informs the	GYA ANS Team	June 2009	Brochure will provide basis 20/hrs

public about ANS and encourages “inspect, clean, dry”			contractor @\$50/hr = \$1,000 \$5,000 printing
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Define and incorporate Best Management Practices into management actions

Task	Responsible Party	Deliverable Due	Approx Cost
Collect and distribute existing protocols and management practices for agencies/organizations to adopt (Clean, Inspect, Dry)	GYA ANS Team	September 2009	Negligible

Identify opportunities to incorporate ANS management into agency/organization decision-making and plans.

Task	Responsible Party	Deliverable Due	Approx Cost
Emphasize the importance of ANS to upper management and encourage all employees to stress the importance of ANS	GYA ANS Team and coworkers	Ongoing	Negligible

Identify and interrupt pathways of introduction: Strategic planning is the key to success in the protection of the GYA from ANS. Past piecemeal attempts at protecting individual waters scattered in a few places of the GYA will not likely succeed in protection the GYA in general...it may not even successfully protect those selected waters. There is a need to strategically identify and interrupt the pathways of introduction. We can do this by identifying and managing key ANS vector routes, encouraging the development of an ANS-free certification program, developing a strategic network of cleaning/treatment infrastructure, developing standard cleaning protocols and a network of ANS experts, and identifying consistent inspection protocols.

There are five primary human vectors or pathways of spread; local users, outside visitors, resource management actions, water delivery systems, and industries. There are also two main concerns; expansion of already present ANS within the GYA and import of new ANS from outside the GYA.

Local users would be considered residents from within the GYA using the local resources. Our primary focus with local users would be to control expansion of already existing ANS populations. Outside visitors would be those most likely to bring new ANS species to the GYA. These are destination users that come from all parts of the country and world.

There are 8-12 major highways that provide access to the area and provide focal points for intercepting threats and educating the public. A logical way to intercept trailered boats would be to use the existing infrastructure of weigh stations. Most of these sites already have mandatory stops for livestock haulers which require a Certificate of Veterinary Inspection for interstate livestock travel. A similar requirement and infrastructure could be developed for boat transportation between and within states. This will require close coordination between the states of the GYA and their departments of agriculture, fish and game, highway, and environmental quality.

A coordinated ad and education program along the major highway corridors traveled by outside visitors would help target outside users.

All anglers are required to have fishing licenses which provides a point of sale and contact. A unified approach to awareness and education is needed. Include an educational message on licenses such as - STOP the Spread – Inspect, Clean, and Dry.

Most outside anglers will also have some form of contact with guide services, shuttles and fly shops. These shops also provide an opportunity for contact where a unified message can be given.

Resource management activities in the past have played a major role in the spread of ANS. For example hatcheries and the stocking of fish infected with whirling disease was one of the major factors in its spread. Field crews commonly are in multiple watersheds within a week’s time without opportunities to completely dry gear between streams. Due to the frequency of stream visits, “inspect, clean, and dry” is not sufficient for resource crews. Institutionalized protocols to prevent ANS spread are critical as it applies to hatcheries and resource personnel.

Resource management actions have the potential to spread ANS when equipment is used in multiple watersheds without proper cleaning. This equipment may be heavy machinery or fire fighting apparatus.

Water delivery systems especially those transbasin diversions high in watersheds transferring water from one drainage or stream to another have the potential for a cascading effect if the source watershed is infested with ANS.

Identify and manage key ANS vector routes

Task	Responsible Party	Deliverable Due	Approx Cost
Work with outfitters, guides, and angler shops to present a unified message.	GYA ANS Team	September 2009	40 opportunities x 4 hours x \$35/hr Professional hours = \$5,600
Develop a highway add campaign to target	GYA ANS Team	March 2010	Sign rental \$750/month

outside and local users.			printing \$650/sign, 12 month rental agreement x 20 signs = \$193,000
Develop a consistent GYA approach to angler education at point of license sales.	GYA ANS Team	March 2010	3 States 10 Professional hours/state @\$35/hr =\$1,050
Identify areas where water delivery systems could exacerbate speed of spread and increase risk of ANS	GYA ANS Team	March 2010	5 professional hours @ \$35/hr x 10 units = \$1,750
Encourage states to cooperate in the development of boat inspection and wash stations at key weigh stations or a certification and education process	GYA ANS Team and State Agencies	March 2010	3 States 10 Professional hours/state @\$35/hr =\$1,050
Encourage the institutionalization of prevention protocols by resource agencies Lead by Example	GYA ANS Team resource agencies	September 2009	3 States 10 Professional hours/state @\$35/hr =\$1,050
Encourage states to adopt the message Stop the Spread –Clean, Inspect, and Dry on fishing licenses.	GYA ANS Team	March 2010	3 States 10 Professional hours/state @\$35/hr =\$1,050
Search and evaluate ongoing certification programs	GYA ANS Team	September 2009	30 Professional hours @\$35/hr= \$1,050
Incorporate education and self-certification program with boat inspections and wash stations to facilitate interstate boat travel.	GYA ANS Team	March 2010	Covered above

Encourage the development of ANS-free certification programs

One method of better assuring voluntary compliance and an interest in education would be the adoption or development of an ANS certification process whereby a boat owner or other users would receive a benefit as a result of their certification. This benefit may be the ability to pass quickly through boat inspection stations. Current options available online include the clean angling pledge and 100th meridian clean boating certificate.

In conjunction with boat inspection stations a certification process could be instituted to educate boaters how to perform their own inspections and on precautions needed when boating in infested waters. When possible, use existing media, such as the videos Don't Move a Mussel parts I and II. Part I deals with the ecology and effects of the mussels while part II educates on how to inspect a boat.

Encourage the adoption or development of ANS-free certification programs

Task	Responsible Party	Deliverable Due	Approx Cost
Search and evaluate ongoing certification programs and select most appropriate for the GYA.	GYA ANS Team	September 2009	30 Professional hours @\$35/hr= \$1,050
Incorporate education and self certification program with boat inspections and wash stations to facilitate interstate boat travel	GYA ANS Team	March 2010	Covered under ANS vectors

Develop a strategic network of cleaning/treatment infrastructure and adopt a standard cleaning protocol

ANS and natural ecosystems have no boundaries. Likewise, successful suppression or prevention necessitates an effort that has no boundaries. Part of education and prevention is instilling a new ethic or behavior to reduce the threat of spread. This new behavior entails the decontamination or cleaning of equipment that has been in contact with water and organisms that may be spread to another area.

Boater surveys and recent infestations demonstrate how ANS can make quantum leaps to major water bodies and then spread from there much like spokes from a wheel. Strategically, to be effective we must successfully intercept these new threats and stop them.

Efforts by others indicate that an effort that solely relies on cleaning and treatment infrastructure are not effective by themselves. This is due in part to the many variables involved in successful treatment. Too heavy of an emphasis on cleaning and treatment infrastructure may ignore the need for individual responsibility of inspecting, removing, cleaning, and drying their gear once home and between waters. Education of the user in regards to their role in prevention of spread of ANS needs to be incorporated in any

cleaning infrastructure. Questionnaires and inspections need to be integrated with cleaning infrastructure to target likely carriers that need a more rigorous decontamination and quarantine.

There may be guides and outfitters and others that feel the need to go beyond inspect, clean, and dry due to their circumstances and issues. There are issues associated with chemical usage that we may not want to be involved with. Yet if people have a genuine need we should assist them in getting the proper information so they can design and maintain their facilities in a way that they not only give the right impression but are effective. Properly run wader decontaminating stations require daily attention and onsite supervision by someone with a sincere interest. In contrast, poorly run and placed sites could become an additional threat. Most agencies do not have the manpower or specific direction to maintain cleaning sites through time unless they can fund seasonals on a year to year basis and divert funds from other programs.

“The key message that should be shared with all groups that may be interested in installing a boat wash facility is as follows: wash stations are a poor substitute for an effective education and watercraft inspection program that emphasizes the basic ‘inspection and removal’ message, BUT washing stations can be one component of an overall prevention and control strategy.” (Aquatic Invasive Species, A handbook for education efforts DNR Publication WT-825 2005)

From an economic and feasibility standpoint it makes more sense to have a few well staffed strategically placed watercraft inspection and wash stations than many local wash stations at individual lakes that are staffed periodically with fluctuating funding and initiative.

As part of all public education the message of inspect, clean and dry should be promoted for all aspects of ANS prevention. The message must be clear and concise with no confusion or conflict – confusion leads to inaction.

Develop a strategic network of cleaning/treatment infrastructure and adopt a standard cleaning protocol

Task	Responsible Party	Deliverable Due	Approx Cost
Research and determine effective approach to ANS prevention for boats – (detailed inspections vs cursory washings)	GYA ANS Team	September 2009	30 Professional hours @\$35/hr= \$1,050
Work with states to develop boat inspections and wash stations at key weigh stations with an education and self certification process	GYA ANS Team	March 2010	3 States 30 Professional hours/state @\$35/hr = \$3,150 Funding needed per station

			\$200,000 first year, \$50,000/year after that. 8 Stations year 1 = \$1,600,000 year 2 = \$400,000
Contact other ANS managers and learn from their experiences, borrow their protocols.	GYA ANS Team	September 2009	5 professional hours @ \$35/hr x 10 units = \$1,750
Contact Boat Inspection Regional Protocols Committee.	GYA ANS Team	September 2009	5 Professional hours @ \$35/hr = \$525
Develop or adopt questionnaire to help identify high risk boats and ensure that they undergo detailed inspection and decontamination.	GYA ANS Team	March 2010	Included with ANS prevention and boats
Determine safe carwashes throughout the GYA to treat contaminated boats	CANS	March 2010	30 Professional hours @ \$35/hr = \$1,050

Develop a network of ANS experts, train resource professionals with ANS identification, and identify and/or develop consistent inspection protocols

There is a need to have annual training for permanent and seasonal employees especially those dealing with education and inspections. The purpose of this would be to train people to be able to identify ANS and educate the public about ANS as well as be able to conduct inspections and be able to assist the public in learning how to inspect their own equipment. Yearly trainings can in central locations or be routed around the GYA.

Develop a network of ANS experts, train resource professionals with ANS identification, and identify and/or develop consistent inspection protocols

Task	Responsible Party	Deliverable Due	Approx Cost
Train field technicians in ANS identification. Coordinate annual ANS training in key areas.	GYA ANS Team	Annually	Covered under seasonal training above
Compile a list of qualified experts and	GYA ANS Team	September 2009	Negligible

create a point of contact for agencies/organizations.			
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Identify and implement changes in authorities and procedures: There is a need to evaluate authorities and procedures to identify opportunities to improve ANS management within the GYA. This would include surveying and documenting existing laws, regulations, and policies, identifying weaknesses, inconsistencies, or absences in authorities and procedures, and supporting/implementing solutions that address the needs identified.

Survey and document existing laws, regulations, and policies

Task	Responsible Party	Deliverable Due	Approx Cost
Assemble all GYA Federal and State laws relevant to water quality, ANS, and the interstate movements of species.	GYA ANS Team	September 2009	(45 hours x 1 Professional Staff x \$35/hr)= \$1,575
Review and assemble all GYA associated agency regulations pertinent to ANS control and protection of its jurisdictional waters.	GYA ANS Team	March 2010	(45 hours x 1 Professional Staff x \$35/hr)= \$1,575
Inventory all legal authorities and procedures for GYA agencies interdicting ANS.	GYA ANS Team	March 2011	Included above

Identify weaknesses, inconsistencies, or absences in authorities and procedures

Task	Responsible Party	Deliverable Due	Approx Cost
By agency, list and map extent of legal authorities to exclude ANS through enforced inspection and decontamination.	GYA ANS Team	September 2009	(45 hours x 1 Professional Staff x \$35/hr)= \$1,575
Compare legal authorities in ANS enforcement for overlapping jurisdictions and establish a lead agency.	GYA ANS Team	March 2010	Included above
Define overall GYA	GYA ANS Team	March 2011	(20 hours x 1

enforcement procedures, and develop consistencies in stop, inspect, and clean actions.			Professional Staff x \$35/hr)= \$700
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Support and/or implement solutions that address the needs identified

Task	Responsible Party	Deliverable Due	Approx Cost
As allowed, promulgate local restrictions, regulations, and containment measures for ANS contaminated waters to promote strengthening of laws and regulations where weaknesses exist.	GYA ANS Team	September 2009	(35 hours x 1 Professional Staff x \$35/hr)= \$1,225
Where needed, and where existing laws allow, petition agency heads to strengthen rules and regulations to exclude ANS.	GYA ANS Team	March 2010	(20 hours x 1 Professional Staff x \$35/hr)= \$700
Where needed, establish delegated deputy authority in local ANS enforcement to secondary agencies.	GYA ANS Team	March 2011	(10 hours x 1 Professional Staff x \$35/hr)= \$350
Through private partners and NGO's, lobby elected officials for passage of robust State and Federal laws that discourage the movement of ANS.	GYA ANS Team	ongoing	(100 hours x 1 Professional Staff x \$35/hr)= \$3,500
Identify interested groups that will independently lobby elected officials for laws that protect uncontaminated waters from ANS.	GYA ANS Team	ongoing	(20 hours x 1 Professional Staff x \$35/hr)= \$700
Identify and legally pursue groups, individuals, or business ventures that directly or	GYA ANS Team	ongoing	(45 hours x 1 Professional Staff x \$35/hr)= \$1,575

indirectly advance the interstate movement of ANS for economic gains or short sighted recreational motives.			
Promote public knowledge of laws and regulations to increase awareness and prevention of ANS through voluntary compliance.	GYA ANS Team	ongoing	(100 hours x 1 Professional Staff x \$35/hr)= \$3,500

GYA-Wide ANS Strategy Goal #2: Survey, report, and respond to ANS in GYA waters.

Objective: Inventory and conduct ongoing surveys of all GYA waters to determine presence and distribution of ANS

- *Prioritize specific bodies of water for surveying*
- *Identify existing survey methodologies.*
- *Adopt and/or develop universal/consistent survey methodologies*
- *Use existing databases to capture survey data.*

Objective: Develop and implement an early detection and rapid response system

- *Develop a communication structure within the GYA*
- *Define authorities and responsibilities in a rapid response scenario*
- *Define response protocol*
- *Utilize current models of collaboration in a rapid response scenario*

Objective: Integrate efforts with existing national reporting systems

Introduction

Without clear knowledge of the location of existing populations of aquatic nuisance species(ANS) and unaffected waters within the Greater Yellowstone Area, our fight against ANS is like boxing in the dark. With the absence of a rapid response plan, we don't have timely knowledge of what to do with our opponent, even if we could see. This portion of the implementation plan addresses the need for protocols for GYA-wide ANS surveys, reporting, and rapid response to newly discovered populations.

This portion of the implementation plan defines the survey of existing conditions in the GYA, an approach to sharing the reports, and a rapid response protocol. Associated benefits from this portion of the implementation plan include clear knowledge of existing conditions to facilitate effectiveness monitoring, a cooperative database for information sharing and communication, and an increased potential for timely response to newly discovered ANS infestations.

Survey: There is a need to adopt or develop a universal ANS inventory protocol and implement it throughout the GYA. Prior to surveying, existing survey data will be gathered and compiled into an interactive GIS format. Using a GIS personal geodatabase format, spatial data and its attributes can easily be displayed, cataloged, distributed, and analyzed by multiple users. Spatial analysis of the data will be invaluable in prioritization of new survey sites, quantifying areas of ANS risk, determining vectors of spread, estimating ANS habitat suitability, and estimating return survey intervals of existing survey sites.

Task	Responsible Party	Deliverable Due	Approx Cost
Develop GYA survey methodology and standards	GYA-Wide Team Subcommittee with help of panel of experts	August 2009, after Teton NP Science Workshop in June 2009	(45 hours x 4 Professional Staff x \$35/hr) + \$1,500 misc expenses and per diem=

			\$7,800
GYA ANS Distribution Data Roundup (areas surveyed and known infestations)	GYA-Wide Team Designates (Portland State University)	December 2009	\$1,500 initially
Develop GYA-Wide ANS Distribution Map	GYA-Wide Team Designates (could be member or consultant)	December 2009 and annually	\$1,500 initially Annual cost to update would be approximately (10 professional staff x 10 hours x \$35/hr)=\$3,500
Prioritize List of Waters for Survey	GYA-Wide Team Subcommittee	May 2010	15 professional staff x 10 hours x \$35/hr=\$5,250
All high priority GYA waters surveyed	Contract	September 2013	\$500,000 through contract

Report: There is the need to develop a protocol for ANS related- reporting, coordinating, and updating of a selected database. At the same time, there is no need to re-invent the wheel. The GYA-Wide ANS group should review current ANS databases to determine if there can be integration into existing projects. We should facilitate the development of ANS distribution databases in GYA states that currently don't have them, and help facilitate universalizing the databases so data can be easily shared within the GYA and nationally. If current databases are found to be insufficient and the ability or willingness to improve them is lacking, then there will be consideration of creating a GYA-Wide database.

Task	Responsible Party	Deliverable Due	Approx Cost
Review GYA Unit ANS databases and determine the need for a universal database	GYA-Wide Team Subcommittee	March 2011	3 Professional Staff x 40 hours x \$35/hour=\$4,200
Make existing databases universal or identify single database to populate.	GYA-Wide Team Subcommittee	March 2011	3 Professional Staff x 40 hours x \$35/hour=\$4,200
Develop protocol for sharing data within GYA and nationally	GYA-Wide Team Subcommittee	March 2010	10 Professional Staff x 1 hour x \$35/hour=\$350

Rapid Response Plan: The GYA features many interstate rivers, lakes, and reservoirs. There is a need to develop a GYA-wide rapid response plan to react to newly discovered ANS populations. Again, there is no need to reinvent the wheel. If each state and

Yellowstone National Park have an ANS rapid response plan, it is a simple matter to ensure coordination between states. If there are needs for rapid response plans, we will facilitate their creation, using the Western Regional Panel Rapid Response Model as a standard for the development of rapid response plans within the GYA.

Task	Responsible Party	Deliverable Due	Approx Cost
<p>Convene States and Federal Land Management Agencies to compare rapid response plans and identify needs. Ensure plans are capable for interstate situations.</p>	<p>GYA-Wide Team Subcommittee</p>	<p>September 2010</p>	<p>15 Professional staff x \$35/hour x 20 hours=\$10,500</p>
<p>Ensure all GYA states and units have rapid response plans by facilitating their creation or developing a GYA-Wide plan.</p>	<p>GYA-Wide Team Subcommittee</p>	<p>October 2010</p>	<p>Included in the above estimate.</p>

GYA-Wide ANS Strategy Goal #3: Abate ecological, socioeconomic and public health and safety impacts resulting from infestations of ANS within the GYA.

Objective: Active management for containment of established populations

Objective: Articulate what research and technology needs are within the GYA and continue to encourage additional research

Objective: Identify and publicize potential and existing threats

Objective: Provide specific information to impacted industries, particularly those that may not think they have a stake in the ANS issue.

Introduction

It is obviously best to prevent the introduction of ANS into the GYA. However, thought should be given upfront to the containment of ANS if they are introduced. To ensure we are equipped with the tools and methods to abate ecologic, socioeconomic, and public health/safety impacts from ANS introductions, we need to identify research and technology needs within the GYA and encourage additional research. In addition, we need to identify and publicize potential threats and communicate that information to potentially impacted industries.

Abating the impacts of ANS is time consuming, costly, and often ineffective. However, not attempting any control of ANS is inviting further spread within the GYA and contamination to other outside areas. Removing or even lessening a well-established ANS problem within a waterway is at times unrealistic. However, in many such situations much can be done to contain the problem and prevent further spread to unaffected waters. Such measures may involve mandatory inspections and cleaning, or even local seasonal closures or quarantines.

Containment: Containment of established populations is the next step after early detection and rapid response (Goal #2). Containment plans may be unique for a given area within the GYA. Control strategies include physical, chemical and biological mechanisms to eradicate or reduce ANS populations. Selection of a control strategy can be influenced by agency policies and mandates, so that different controls may be employed for the same ANS depending on what jurisdiction it may fall in. If each state and federal land management agency in the GYA had an ANS containment program in place, they should coordinate their efforts with the other affected agencies during implementation. Containment methods and protocols vary depending on the ANS to be contained. For that reason, guidelines for containment are general. Some considerations while developing containment plans within the GYA include:

- A control strategy must not create problems greater than those of the aquatic nuisance species itself;
- A control strategy must not cause significant impacts to the environment or non-target organisms; nor have any negative consequence to human health or safety.
- There must be a need to control the aquatic nuisance species due to it causing, or the potential for it causing, a significant adverse impact;

- A control strategy must not reduce the human utilization of the water body (except when appropriate in waters within specially protected areas such as national parks);
- A control strategy should be specific to the GYA and adaptable locally.
- A control strategy must have a reasonable likelihood of succeeding and be cost effective.

Timing for the containment of ANS should coincide with the rapid response system (Goal #2) and be a smooth transition from an immediate response to a long term containment effort.

In trying to minimize an ANS problem, it is important to first fully assess the extent of the contamination. Is this a long standing ANS issue, or is it newly introduced? If it is a known ANS nuisance, has it spread appreciably? Are there new factors (i.e. increased recreational activity) that may increase the risk of spread now? If it is a new ANS find, can actions taken now contain or even eradicate the problem?

In attempting control of ANS, assessment should lead to a prioritization of where to invest your time and effort. Since multiple variables can determine priorities in controlling ANS, using a matrix approach can help describe the problem through relative comparison. The following table is an example matrix that can be used in determining which ANS areas should have priority:

ANS Affected Site	Establd .prob. (25)	Newly introduced ANS (50)	Threat to public health and safety (50)	Significant resources at risk? (50)	Approx. area size involved (100)	Feasible control method available (50)	Control success highly likely (100)	Priority
								Total Score
A	Yes		No	Yes (cutthroat trout)	300ac.	Yes	No	3
	25			50	30	50		155
B		?	Yes	?	2ac.	No	?	2
		50	50	50	100		100	350
C	Yes		No	No	1000a c.	Yes	No	4
	25				10	50		75
D		Yes	?	Yes (cutthroat trout)	?	Yes	Yes	1
		50	50	50	100	50	100	400

Example Matrix Point Assessment Tool. Unknowns are allocated the full point value. In this example, ANS site D would be the highest priority.

Monitoring is necessary to evaluate the effectiveness of abatement efforts. Monitoring should be done as soon as possible so that adjustments to control work can be timely.

Task	Responsible Party	Deliverable Due	Approx Cost
Ensure states and federal agencies have general containment plans that are applicable to typical ANS scenarios throughout the GYA	GYA-Wide Team Subcommittee	April 2010	(2 hours x 4 Professional Staff x \$35/hr)= \$280
Facilitate or assist in the development of containment plans in high priority areas where they do not exist.	GYA-Wide Team Subcommittee	April 2010	(45 hours x 4 Professional Staff x \$35/hr)= \$6,300

Abatement Research: The science of how to effectively contain, control, and eradicate ANS populations continues to develop. It is important to stay current with the latest methods and techniques and to encourage the development of new methods when necessary. The GYA ANS group supports scientific research between state and federal agencies and academic institutions that investigate potential control strategies and associated environmental impacts. Identification of what the ANS research needs are within the GYA will be an ongoing process as infestations occur and new threats are detected. Possible topics for current research needs include; inventories, vectors, high priority waters, high probability waters, most probable invaders, and rates of spread, and ecological impacts. Participate in a technology transfer program to be used in distributing research findings.

Task	Responsible Party	Deliverable Due	Approx Cost
Remain current with latest applicable abatement research and techniques	Professional responsibilities of appropriate GYA ANS team members	Ongoing	Negligible (part of professional responsibilities)
Facilitate the development of applicable abatement techniques when necessary through contributing funding, personnel, and study sites when possible.	GYA ANS team members with program management responsibilities	Periodic as needed	(45 hours x 6 Professional Staff x \$35/hr)/year= \$9,450/year

Identify and publicize potential and existing threats: The ability to identify and publicize potential and existing threats is important to the effective abatement of ANS invasions. While baseline and monitoring are discussed in Goal #2, we can also engage the public in reporting ANS they encounter in the GYA (Goal #1). Important factors to consider in the assessment of the risk an identified ANS invasion include:

- Identify geographical extent of ANS contamination, what species are present, and whether the ANS is established or incipient.
- Determine what resources are at risk, what socio-economic values are impacted, and if there is a threat to public health and safety.
- Assemble all existing applicable research and other information for the involved ANS, and develop a species specific control strategy.
- Prioritize which ANS waters to control based on threat level and probability of success.

There is a need to develop a list of experts to quickly voucher ANS species if they are sampled in GYA habitat. In addition, there is a need to publicize new ANS invasions in the GYA to protect against their further spread and inform the public.

Task	Responsible Party	Deliverable Due	Approx Cost
Develop a contact list composed of ANS identification experts that can quickly assist in the voucher of ANS if they are discovered in the GYA.	Entire GYA-Wide ANS Team via email.	September 2009	(5 hours x 4 Professional Staff x \$35/hr)= \$700
Ensure states and federal land management agencies have developed protocols and media contacts to publicize new ANS invasions as they are documented. Assist if needed	GYA-Wide ANS subcommittee working with appropriate GYA states and land management agency personnel.	September 2010	(5 hours x 4 Professional Staff x \$35/hr)= \$700
Develop sign to post near infected waters instructing water users of danger of spreading ANS.	Subcommittee of GYA-Wide ANS Team.	July 2009	(20 hours x 10 Professional Staff x \$35/hr)= \$7000 + printing \$7000=\$14,000

Disseminate Information to Impacted Industries: Public outreach is an important component of this implementation plan. Please refer to Goal #1.

GYA-Wide ANS Strategy Goal #4: Provide a cooperative environment that encourages coordinated activities among all interested parties throughout the GYA.

Objective: Pool resources where appropriate to achieve goals and eliminate duplicity/competition

- *Convene regular meetings to share information*
- *Review annual GYCC project proposals for prioritization*
- *Encourage projects that benefit the entirety of the GYA, not in competition*

Objective: Pursue project funding to implement this implementation plan

- *Develop list of potential funding sources for shared proposals*
- *Identify internal funding sources for ANS management*

Objective: Encourage GYA organizations, businesses, and individuals to participate and support the ANS effort

- *Facilitate local cooperative partnerships where logical within the GYA*

Objective: Coordinate with national, regional, and local efforts

Introduction

The goal of this component of the implementation plan is a cooperative environment that encourages coordinated activities among all interested parties throughout the GYA. The key to this goal is the creation of a series of linked, relational databases along with the development of an on-line forum with which to share these databases and make it possible to easily access the GYCC ANS Subcommittee’s wealth of resources. Ideally, we would develop a system that can accommodate both the general public and internal communication needs (two levels of access to the information). The databases would include a funding database, a contact/partner database and a calendar database.

Pool resources where appropriate to achieve goals and eliminate duplicity/competition: To maximize the effectiveness and efficiency of prevention and management of ANS within the GYA, it is necessary to work cooperatively between federal agencies, state agencies, county agencies, and NGOs. Communication must occur frequently to coordinate funding proposals and encourage partnerships.

Convene regular meetings to share information

Task	Responsible Party	Deliverable Due	Approx Cost
Elect a sub-committee secretary responsible for sending out GYCC Sub-Committee meeting notices, meeting logistics, note-taking, and posting of notes	GYA ANS Group	Fall 2009	50 hrs/year by professional staff (\$35/hr)=\$1,750

according to accepted practices and procedures. Determine appropriate term for secretary and procedures to re-fill as needed			
Get concurrence from group to suggested meeting schedule of 2 times per year (1st week in April and 1st week in November) (Add to Feb. 18th agenda)	GYA ANS Group	March 2009	Negligible (done at biannual meeting)
As communication plan is being developed, instruct committee members on use of Google Groups as an interim forum	GYA ANS Group	March 2009	2 hours by professional staff=2 x \$35=\$70
Implement and clearly communicate procedures for posting new information among group members	GYA ANS Group	September 2009	Negligible (done at biannual meeting)
Create calendar to inform group about other relevant ANS meetings around the country (use Google Groups as interim communication forum until new one developed)	GYA ANS Group	March 2010	5 hours by contractor or consultant to create calendar and implement it for use = 5 X \$100=\$500

Review annual GYCC project proposals for prioritization

Task	Responsible Party	Deliverable Due	Approx Cost
Review and revise measurable outcomes and outputs from FY09 GYCC project call	GYA ANS Group	September 2009	Negligible (done at meetings)

Review and revise point system for rating GYCC projects	GYA ANS Group	September 2009	Negligible (done at meetings)
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Encourage projects that benefit the entirety of the GYA, not in competition

Task	Responsible Party	Deliverable Due	Approx Cost
Create an excel spreadsheet to use as a foundation for a future funding database (Goal #4 group will do). Spreadsheet would include: target area (education, marketing, etc.); fund source; who can apply; due dates; links to URLs; etc.	Implementation Plan Goal #4 Group	September 2009	10 hrs to create and populate spreadsheet by professional staff= 10 X \$35=\$350 This assumes we already have the data to populate the fields.
Incorporate this spreadsheet into funding database (see Objective #2)	GYA ANS Group	March 2010	50 hrs by database contractor (\$100) to create database= 50 X \$100=\$5,000
In interim, post spreadsheet to Google Groups	GYA ANS Group	March 2010	1 hr by professional staff= 1 x \$35=\$35.
Develop list of prioritized needs – this will become guidance for people looking to create partnership efforts	GYA ANS Group	March 2010	Negligible (done at meetings)
Update and maintain database on website	GYA ANS Group	March 2011	2 hr/month by database contractor= 24hrx \$100=\$2,400/year
Insure that spreadsheet links to other databases	GYA ANS Group	March 2011	5 hrs by database contractor= 5 X \$100= \$500 (one time or periodic)

Pursue project funding to conduct activities within this implementation plan: Although some elements in this implementation plan can be conducted with inkind labor contributed by a GYA ANS group member, other elements will require financial support. There is a need to identify potential external and internal funding sources for ANS management within the GYA.

Develop list of potential funding sources for shared proposals

Task	Responsible Party	Deliverable Due	Approx Cost
Develop an excel spreadsheet to list grant opportunities including deadlines, eligibility, amounts and examples of successful proposals	GYA ANS Group	September 2009	Incorporated above
Have ANS subcommittee assess the need for the creation of an over-arching funding management group (new non-profit or stopANS?)	GYA ANS Group	September 2009	Negligible (done at meetings)
Incorporate spreadsheet into relational database	GYA ANS Group	March 2010	Included above
Investigate tax-like funding opportunities (such as AIS sticker) to increase funding availability for units within the GYA.	GYA ANS Group	March 2010	20 hours/potential opportunity by professional staff = 20 x \$35 x 5 (potential opportunities)=\$3500 through March 2010.

Identify internal funding sources for ANS management

Task	Responsible Party	Deliverable Due	Approx Cost
Identify contact individual in each agency/unit (National, Regional, and local)	GYA ANS Group	September 2009	Negligible (done at meetings)
Agency/unit contact provide list of internal funding that	GYA ANS Group	March 2010	Negligible (done at meetings)

has been used in the past and/or could be tapped in the future			
Incorporate agency information into funding database and update as needed	GYA ANS Group	March 2011	Negligible because it is included as part of overall funding database.

Encourage GYA organizations, businesses, and individuals to participate and support the ANS effort: There is a need to engage local organizations, businesses, and individuals that are currently not aware of the ANS issue.

Facilitate local cooperative partnerships where logical within the GYA

Task	Responsible Party	Deliverable Due	Approx Cost
Create a database of known partners. Include local business sponsors for workshop or evening talk events	GYA-Wide ANS Team	September 2009	10 hrs by professional staff to collate info = 10 x \$35=\$350
Propose participation levels defined below to GYCC ANS subcommittee for approval *	GYA ANS Group	September 2009	Remains the same (done at meetings)
Assign responsibility to maintain/update contact/partner lists	GYA ANS Group	September 2009	1 hr/month by professional staff=12 x \$35=\$420/year.
Develop a formal 'recognition' process for partners (eg. 'sponsors' should get annual thank-you letter from subcommittee; participants/sponsors to get window stickers) and who is responsible (suggest subcommittee secretary)	GYA ANS Group	March 2010	4 hrs/month by professional staff + materials (\$2000) + postage (\$500) = \$4180 through March 2010
Develop and implement process	GYA ANS Group	March 2010	Negligible (done at

through which to make new contacts			meetings)
Incorporate contact spreadsheet into on-line database forum.	GYA ANS Group	March 2010	Negligible. (to be done as part of database creation)
Maintain/update the database partners and potential partners, including contact information, documentation of when contacted, by whom, and results of contact	GYA ANS Group	March 2010	10 hrs/month by professional staff= 120 X \$35= \$4200/year
Create/update/maintain links to partner URL	GYA ANS Group	March 2011	1 hr/month by professional staff = 12 X \$35= \$420/year.

***Proposed definitions:**

Partner – actively involved in subcommittee; would include all people working on ANS in our area

Sponsor – group or individual that contributes actual dollars to the cause

Participant – an example of a participant would be a business that allows us to post/distribute information

Other – groups or individual that want only to be included on our mailing lists

Coordinate with national, regional, and local efforts: The purpose of the GYA ANS group is to facilitate a coordinated effort in the prevention and management of ANS in the GYA because each of the partners recognizes they cannot accomplish these tasks independently. In addition, coordinating with national ANS efforts prevents reinventing the wheel, keeps GYA ANS group members current with similar ANS issues occurring external to the GYA, and informs them of nationally-based opportunities.

Develop an over-arching communication forum for the GYCC ANS Subcommittee

Task	Responsible Party	Deliverable Due	Approx Cost
Investigate possible venues (Google Groups, Sharepoints, Website)	GYA ANS Group	September 2009	10 hrs by professional staff = 10 x \$35= \$350
Maintain/update communication forum	GYA ANS Group	March 2011	10 hrs/month by professional staff = 120 X \$35= \$4200/year
Link all sub-	GYA ANS Group	March 2011	Included in

committee databases using various fields such as 'focus' (e.g. education, marketing, mudsnails, etc.)			database creation
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Formally tie into national, regional and/or local efforts

Task	Responsible Party	Deliverable Due	Approx Cost
Identify national, agency, regional and local efforts and groups	GYA ANS Group	September 2009	Done at meetings
Classify above groups as partners where applicable and add to contact database	GYA ANS Group	September 2009	Included in database cost.
Determine whether we need to solicit volunteers from the GYCC ANS subcommittee to serve as official representatives on any of these groups	GYA ANS Group	March 2010	Done at meetings.
Attend national/regional/local meetings as appropriate	GYA ANS Group	March 2011	20 hrs/meeting x 4 meetings/year by professional staff and average travel costs (\$500/meeting)= (20 x \$35)4+ \$500 x 4= \$4800/year

Identify opportunities to work together

Task	Responsible Party	Deliverable Due	Approx Cost
Produce annual "planned activities" report that outlines projects that all partners are planning or considering for up coming month. This will provide a great	GYA ANS Group	March 2011	40 hrs/year by professional staff to create and print report = 40 x \$35= \$1400/year.

tool to both promote the work we do and to alert each other to partnering possibilities that each of us has.			
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