

Aquatic Nuisance Species Task Force Activity Reporting Form

Form Instructions:

Report Type: Select Federal Member, Ex officio Member, or Regional Panel.

Affiliation: Specify the entity that the report will represent. If reporting for more than one entity, a separate form should be completed for each organization.

Point of Contact: Information for the individual who can address any follow-up questions about the form.

Accomplishments and Ongoing Efforts: Information should be completed for each specific Activity conducted within your organization that supports the goals and objectives of the ANSTF Strategic Plan. Additional pages will be generated as needed. Requested information for each Activity includes:

- Activity Title: A distinct title that can be used to identify the Activity.
- Activity Description: Brief description about the Activity that includes its goal, implementation steps, and how it supports the ANSTF Strategic Plan. If the Activity has been completed, include a short statement about what was accomplished. If the Activity is ongoing, include a short statement on what has been achieved to date.
- Status: Select Planned, Ongoing, Complete, or Routine Operation. Routine Operations are those that are performed on a routine basis to support the ANSTF or reporting organization (e.g., meetings, maintaining databases / websites).
- Start / End Date: Indicate the time frame when the Activity will be conducted. Fiscal Year(s) is sufficient; if more detailed information is available, please indicate.
- Lead Organization: Agency, Regional Panel, organization, or committee responsible for project implementation
- Partners Organization(s): Other entities involved in the projects. Please list all partners, even those not associated with ANSTF.
- Funding Amount and Source(s): Select the appropriate funding type and specific the specific agency / organization. For each funding type selected, include the amount of funding provided per fiscal year. Total Funding will be automatically calculated. If funding is "To be Determined"; indicate as "0" and note as such in "Additional Comments."
- Relation to the ANSTF Strategic Plan Goals and Objectives: Select the ANSTF Strategic Plan Goals and Objectives supported by the project. If the project clearly supports multiple goals, selecting more than one is acceptable. For each Goal selected, indicate the amount of funding spent for the management category (from all sources) per fiscal year. Total Funding will be automatically calculated; ensure that the amount matches the Total Funding in the Funding Amount and Source(s) section above.
- Additional Comments (optional): Any additional information you feel is necessary to adequately describe the Activity and its relationship to the ANSTF Strategic Plan.
- **Documents and Images** (optional): Citation, internet link, for documents and images relevant to this project. Write "Attached" if documents or images will be attached to the form submission.

Report Type:	Regional Panel
Member or Pa	nel: Mid-Atlantic Panel on Aquatic Invasive Species
Point of Cont	act:
Name:	Ray Fernald
Title:	Chair, Mid-Atlantic Panel on Aquatic Invasive Species
Organization	Virginia Department of Game and Inland Fisheries
Address	P.O. Box 90778, 7870 Villa Park Drive, Henrico, VA 23228-0778
E-mail:	ray.fernald@dgif.virginia.gov
Phone:	804-367-8364

ACC	ompiishm	ents and (Ungoing Efforts:					
Acti	tivity Title: Administration and Coordination of Panel Activities, and interagency Communications							
Acti	ivity Descri	ption: Go	als, activities, implementation	n steps, outcor	nes, and linkage to ANSTF	Strategic Plan:		
mid- The cand ager Snai Sped (NEA unal recip ager optio	lementing stranding stranding stranding scaled due to the fall 2016 and included ls, the Chesapties Plan. The spring 20 ANSP) in July sole to meet, to bients of the Inflies and particles and particl	rategic, coor on, and to coor attended to the ongoing 5 MAPAIS m member up beake Bay N e meeting w 017 MAPAIS 2017, but w he Executive MAPAIS Smart supports O tners, and the	Atlantic Panel is to assist state and redinated, and action-oriented appropriate and communicate these the All-Panels Meeting and ANSTF is continuing FAC review of ANSTF, seeting was held 15-16 November 2 dates and presentations on several lutria Eradication Program, Zebra Mass followed by a tour of the Smiths of Smeeting was scheduled to be held as canceled because of the ongoing e Committee, with input from revieal Grant Projects awards for 2017, abjectives 1.1, 1.2, 1.3, and 1.4 of the ANSTF, regarding all facets of All adding for ANS activities by engaging	oaches for the pro- eactivities with the meeting in Noven 2016 in Annapolis al Small Grant Pro- Aussels in Marylar sonian Environme d as a joint meeting g FAC review of A ewers of subgrant as presented belowe e ANSTF Strategic S prevention, det	evention and control of aquatic e other Regional Panels, the AN aber 2016: the scheduled sprin- , MD. In addition to routine but jects and other topics including and, biogeography of didymo, and antal Research Center in nearby and with the Northeast Aquatic in NSTF and its subcommittees. It is submissions, conducted a control. TPlan by enhancing coordinatic ection, and control. It also add	c invasive species in the NSTF, and other partners grows 2017 meeting was siness matters, the grows Zealand Mud and the Maryland Invasive Edgewater, MD. Nuisance Species Panel Because the Panel was aference call to determin on among MAPAIS resses Objective 8.2 by		
Stat	us:	{	Routine Operation					
Star	t Date:	[1 October 2016					
End	Date, if ap	plicable:	30 June 2018					
Lead	d Organizat	tion:	MAPAIS		191			
Part	ner Organi	zation(s):	All Panel members and organization	ons, and invited s	peakers and public guests at M	APAIS meetings.		
Fun	ding Amoi	unt and S	ource(s) Source(s)	\$ Amount-	FY 16 \$ Amount - FY 17	\$ Amount - FY 18		
\boxtimes	Fede	eral Agend	U.S. Fish and Wildlife Service	5,382	2,125	0		
	State G	overnmer	nt					
	Local G	overnmer	nt					
	Tribal G	overnmer	nt					
	Academic	Institutio	on					
		NG	0					
		Othe	er					

Total Funding for Activity 5,382

2,125

0

\boxtimes	Coc	ordination	\$ Amount FY 16 5,382	\$ Amount FY 17	2,125	\$ Amount FY 18	0			
		Objective 1.1: S	trengthen the coordination cap	acity of the ANSTF						
		Objective 1.2: E ANSTF goals an	valuate the ability of statutory a d objectives	uthorities, regulati	ons, and progra	ms necessary to in	nplement			
		Objective 1.3: F	Objective 1.3: Facilitate the development and continued effectiveness of State and interstate ANS management plans							
			Objective 1.4: Coordinate the development and implementation of ANSTF- approved species control and management plans and pathway management plans							
		Objective 1.5: C	Objective 1.5: Cooperate with nations that have neighboring waters and shared pathways with the United States to prevent, detect, and control ANS							
	Prev	ention	\$ Amount FY 16	\$ Amount FY 17		\$ Amount FY 18				
		Objective 2.1: To appropriate me	ake steps to interdict specific pa asures	thways by develop	oing and implem	enting guidance	and			
		Objective 2.2: Fa	acilitate use of science-based ris e introduction of ANS or potent	k assessment and sial species of conce	screening proce ern	dures to assess an	d prioritize			
		Objective 2.3: E	xpand training and use of the Ha d by natural resource managers			Point (HACCP) pro	gram into			
	ERD	RR	\$ Amount FY 16	\$ Amount FY 17		\$ Amount FY 18				
		Objective 3.1: Fa	acilitate surveys and monitoring	to detect ANS						
		Objective 3.2: N	ake taxonomic and ecological i	nformation and ex	pertise readily a	vailable				
		Objective 3.3: In	crease public and industry invo	lvement in early de	etection and rap	id response progr	ams -			
		Objective 3.4: Fa	acilitate development of rapid re	esponse continger	ncy plans					
		Objective 3.5: B	uild capacity to respond rapidly	to invasions						
	Cont	trol	\$ Amount FY 16	\$ Amount FY 17		\$ Amount FY 18				
		Objective 4.1: So	upport and evaluate ANSTF-app	roved control and	management pl	ans				
		Objective 4.2: In	crease invasive species training	for natural resource	ce managers and	l leverage particip	ation			
		Objective 4.3: Evaluate the benefits and risks associated with the commercial harvest of ANS as a means of control or eradication								
		Objective 4.4: Er	ncourage an Integrated Pest Ma	nagement (IPM) ap	proach to mana	ge existing ANS p	opulations.			
	Rest	toration	\$ Amount FY 16	\$ Amount FY 17		\$ Amount FY 18				
		Objective 5.1: Re	estore impacted ecosystems							
		Objective 5.2: A	ddress and provide technical ass on projects	sistance for invasiv	e species manag	gement before, du	iring, and after			

	Edu	cation	\$ Amount FY 16		\$ Amount FY 17		\$ Amount FY 18	
		Objective 6.1: ANS and action	: Increase understar	nding among then to prevent ar	ne general public ond control ANS	of the problems a	and impacts assoc	iated with
		Objective 6.2:	Disseminate ANS o	outreach and te	chnical guidance	materials to targe	et audiences	
		related to AN						
		Objective 6.4: and solutions	Promote awarenes and to legislators a	ss of the ANSTF and other decisi	and its activities a ion makers	and provide educ	ational briefings o	on ANS threats
	Rese	earch	\$ Amount FY 16		\$ Amount FY 17		\$ Amount FY 17	
		community	Develop and main					
		Objective 7.2: ANS	Develop and main	tain guidance d	locuments, protoc	ols, and best ma	nagement practic	es related to
		Objective 7.3:	Track the progress	of research act	ivities funded or p	rioritized by the	ANSTF	
		Objective 7.4:	Support developm	ent of socio-ec	onomic research t	o quantify the ed	onomic impact of	FANS
		Objective 7.5:	Support research o	n interdiction r	nethods for specil	fic pathways of A	NS3	
			Support efforts to i S that have becom		nd expand researc	h relevant to con	trol and eradication	on measures
		Objective 7.7:	Encourage researc	h to develop sp	ecies invasion-ris	c forecast tools		
		Objective 7.8:	Support existing d	atabases and gl	obal database net	tworks		
\boxtimes	Fune	ding	\$ Amount FY 16 0		\$ Amount FY 17	0	\$ Amount FY 18	0
		Objective 8.1:	Secure dedicated,	long-term fund	ing for the ANSTF	Strategic Plan ac	tions	
		Objective 8.2: within Federa	Optimize use of cu l agencies and addi	rrent funding fo itional partners	or ANS activities by	y engaging pote	ntial resources and	d programs
		Objective 8.3:	Develop a list of Al	NS funding prio	rities			
Tota	al Fu	nding:	\$ Amount FY 16 5,	382	\$ Amount FY 17	2,125	\$ Amount FY 18	0
Add	dition	nal Comments	(Optional):					
MAF mos our Mar prov Doc	PAIS st t of or MAPA yland vided t tume	ates and agencie or USFWS funding IS website redesi Sea Grant, and tr to MAPAIS memb ents and Image	es virtually all ANSTF es: Activities more dir g among projects in eign and relaunch, minavel by the MAPAIS opers or meeting parties (Optional) AISMinutes Agenda Fi	ectly addressing our Small Grants nimal expenses fo chair to semiannu cipants for their t	specific Goals and C Program. Other exp or meeting facilitational Pal ANSTF and All-Pa	Objectives are high penditures include on, administrative anel meetings. No	lighted below. MAI MAPAIS special pro and fiscal support p reimbursement is n	PAIS allocates bjects such as provided by outinely
Ac	lditio	onal Projects	-					
		Yes	Please continue l	by entering int	formation for the	next project o	n the following i	nanes

C

Act	ivity Title: MAPAIS S	mall Grants Program (SPG)	
Act	ivity Description: Go	als, activities, implementation steps, outcomes, and li	nkage to ANSTF Strategic Plan:
Three of A project pro	prities. Since 2007, the Pare projects were comple als risk and risk reduction pect from FY2016 continuohibian populations. Because our spring 201 missions, conducted a collects were selected for functions were species introduction from the northern snakehead, y stages of the invasion of the continuous aregional approach the Each SPG projects is do This Activity supports Concies and partners, and the projects and partners, and the complex concies and partners.	annual grants competition to fund on-the-ground activities addrined has awarded \$431,563 in project funding, and has leveraged and in 2017, including: (1) Training and evaluation of dogs for ear in the bloodworm trade; and (3) and Pymatuning Invasive specified through FY2017: The use of environmental DNA (eDNA) to determine through FY2017: The use of the MAPAIS Executive Committee, with onference call to determine recipients of the MAPAIS Small Grant anding, including: (1) An analysis of the recreational vector and a dions in mid-Atlantic waterways; (2) Monitoring to manage: deter Channa argas, in Jug Bay tidal freshwarer marshes, Patuxent River a destructive freshwater snail; (4) First International snakehead of AIS control and management. Cumented below as a discrete Activity, beginning with the first first placetives 1.1, 1.2, 1.3, and 1.4 of the ANSTF Strategic Plan by entitle ANSTF, regarding all facets of AIS prevention, detection, and ding of ANS activities in the region, and establishment of region	l over half a million dollars in partner funds. Ily detection of nutria; (2) Economic Analysis es boat inspection stations. One ongoing etect the emergent infectious pathogens in Input from reviewers of subgrant Projects awards for 2017. Five new ssociated pathways to aid in the prevention mining best population control approaches er; (3) Using environmental DNA to detect I symposium; and (5) Mid-Atlantic lake scal year of project funding. hancing coordination among MAPAIS control. It also supports Objectives 8.2 and
Stat	tus:	Ongoing	
Sta	rt Date:	1 October 2016	
End	Date, if applicable:	30 September 2017	
Lea	d Organization:	MAPAIS	
Par	tner Organization(s):	All Panel members participate in review and selection of Small G scheduled MAPAIS meetings.	rant Program proposals at regularly
Fun	ding Amount and S		Amount - FY 17 \$ Amount - FY 18
\boxtimes	Federal Agen	U.S. Fish and Wildlife Service 0	0
	State Governme	nt [
	Local Governme	nt	
	Tribal Governme	nt	
	Academic Institution	on	
	NG	0	
	Oth	er	
		Total Funding for Activity	

\boxtimes	Coc	ordination	\$ Amount FY 16 0	\$ Amount FY 17	0	\$ Amount FY 18	0			
		Objective 1.1: St	trengthen the coordination cap	acity of the ANSTF	:					
	•	Objective 1.2: Ev ANSTF goals and	valuate the ability of statutory a d objectives	uthorities, regulat	ions, and progra	ms necessary to ir	nplement			
		Objective 1.3: Fa	Objective 1.3: Facilitate the development and continued effectiveness of State and interstate ANS management plans							
		Objective 1.4: Coordinate the development and implementation of ANSTF- approved species control and management plans and pathway management plans								
		Objective 1.5: Cooperate with nations that have neighboring waters and shared pathways with the United States to prevent, detect, and control ANS								
	Prev	ention	\$ Amount FY 16	\$ Amount FY 17		\$ Amount FY 18				
		Objective 2.1: Ta appropriate mea	ake steps to interdict specific pa asures	thways by develo	ping and implen	nenting guidance	and			
		Objective 2.2: Fa	ncilitate use of science-based rise introduction of ANS or potent	k assessment and	screening proce	dures to assess an	d prioritize			
		Objective 2.3: Ex	rpand training and use of the H I by natural resource managers	azard Analysis and		Point (HACCP) pro	gram into			
	ERD	RR	\$ Amount FY 16	\$ Amount FY 17		\$ Amount FY 18				
		Objective 3.1: Fa	cilitate surveys and monitoring	to detect ANS						
		Objective 3.2: Ma	ake taxonomic and ecological i	nformation and ex	pertise readily a	vailable				
		Objective 3.3: Increase public and industry involvement in early detection and rapid response programs								
		Objective 3.4: Fa	cilitate development of rapid r	esponse continger	ncy plans					
		Objective 3.5: Bu	uild capacity to respond rapidly	to invasions						
	Cont	trol	\$ Amount FY 16	\$ Amount FY 17		\$ Amount FY 18				
		Objective 4.1: Su	pport and evaluate ANSTF-app	roved control and	management p	lans				
		Objective 4.2: Inc	crease invasive species training	for natural resour	ce managers and	l leverage particip	ation			
		Objective 4.3: Evaluate the benefits and risks associated with the commercial harvest of ANS as a means of control or eradication								
		Objective 4.4: En	courage an Integrated Pest Ma	nagement (IPM) a <u>ı</u>	oproach to mana	nge existing ANS p	opulations.			
	Rest	oration	\$ Amount FY 16	\$ Amount FY 17		\$ Amount FY 18				
		Objective 5.1: Re	store impacted ecosystems							
		Objective 5.2: Address and provide technical assistance for invasive species management before, during, and after habitat restoration projects								

	☐ Education		\$ Amount FY 16		\$ Amount FY 17		\$ Amount FY 18		
			: Increase understanding ons that can be taken to p			of the problems a	and impacts assoc	iated with	
		Objective 6.2: Disseminate ANS outreach and technical guidance materials to target audiences							
		related to AN							
			Promote awareness of t and to legislators and of			nd provide educ	ational briefings (on ANS threats	
	Rese	earch	\$ Amount FY 16		\$ Amount FY 17		\$ Amount FY 17		
		Objective 7.1: community	Develop and maintain a	list of AN	S research prioritie	es; communicate	this list to the sci	entific	
		Objective 7.2: ANS	Develop and maintain g	uidance d	locuments, protoc	ols, and best ma	nagement practic	es related to	
		Objective 7.3:	Track the progress of res	search act	ivities funded or p	rioritized by the	ANSTF		
		Objective 7.4:	Support development o	f socio-ec	onomic research to	o quantify the ed	conomic impact o	FANS	
		Objective 7.5:	Support research on inte	erdiction r	methods for specif	ic pathways of A	NS3		
			Support efforts to identi S that have become esta		nd expand researcl	h relevant to cor	ntrol and eradicati	on measures	
		Objective 7.7:	Encourage research to d	levelop sp	ecies invasion-risk	forecast tools			
		Objective 7.8:	Support existing databa	ses and g	lobal database net	works			
\boxtimes	Fund	ding	\$ Amount FY 16 0		\$ Amount FY 17	0	\$ Amount FY 18	0	
		Objective 8.1:	Secure dedicated, long-	term fund	ing for the ANSTF	Strategic Plan ac	tions		
	•	Objective 8.2: Optimize use of current funding for ANS activities by engaging potential resources and programs within Federal agencies and additional partners							
		Objective 8.3:	Develop a list of ANS fur	nding prio	rities				
Tota	al Fu	nding:	\$ Amount FY 16 0		\$ Amount FY 17	0	\$ Amount FY 18	0	
Add	dition	nal Comments	(Optional):						
spec gov are a eacl incli	cific Al ernme addres h indiv uded i	S projects and acents, and other states and other states are in the projectional project. Ex	es virtually all ANSTF Goals ctivities to be developed ar cate and federal agencies. T ct-specific narratives below spenditures related to man- ted under Administration a es (Optional)	nd impleme The goals a r. Similarly, agement o	ented by MAPAIS me nd objectives of eac , Small Grant Project f the budgets, grant	ember agencies, N h project funded 1 expenditures are	GOs, academic inst through out Small G provided in the Act	itutions, local irants Program ivity Report for	
		onal Projects	•	toulas !-	formation for the		on the fall and a		
(Yes	Please continue by er	itering in	rormation for the	e next project o	n the following	pages	

Activity Title:	Small Grant Project: Training and Evaluation of Dogs for Early Detection of Nutria (Myocaster coypus)	

Activity Description: Goals, activities, implementation steps, outcomes, and linkage to ANSTF Strategic Plan:

Through efforts funded in part by MAPAIS, the Interagency Mid-Atlantic Nutria Management Team has determined the known range of nutria in Virginia; established management zones for detection, monitoring, and eradication of this species; and developed a cooperative interagency program to address this invasive threat. Our primary objective addressed in this study was to develop an ability to detect range expansions within the "Early Detection – Rapid Response" management zone, and to facilitate "mop up" operations in areas that have already undergone extensive nutria removal, by developing an effective way to detect low-density nutria populations and incursions characteristic of range expansion or reoccupation. This project was designed to evaluate whether a dog can determine nutria presence or absence effectively, by controlling for the following variables: distance from evidence (1, 10, 20, and 40 meters), speed of search for evidence (1, 5, and 10 kilometers per hour), type of evidence (scat, hair, scent trail, and carcass), environmental exposure of the evidence (measured UV light, temperature, water saturation, and age), and likely false positives (muskrat, beaver, raccoon, and otter).

The investigators trained 2 subjects ("Birdee" and "Jake") and then measured their performance accuracy (sensitivity and specificity) to detect nutria target odors and avoid non-target likely marsh mammal (muskrat, beaver, raccoon, and otter) odors, and efficiency by the time it took to locate a target and the distance at which they detected it under various environmental conditions. We measured distance from the "change of behavior" to target, time of search from start to an alert, positive and false positive alerts and environmental variables (temperature, humidity, wind, and target moisture). The test subjects were extremely accurate; across 688 trials conducted either indoors or outdoors under a variety of atmospheric conditions the subjects altogether committed only 6 detection errors (2 misses, and 4 false alarms), for an aggregate accuracy rate of 99.1%.

This Activity supports Objectives 3.1, 3.3, 3.4, and 3.5 of the ANSTF Strategic Plan by enhancing ANS early detection / rapid response efforts, Objectives 4.1 and 4.2 regarding support of approved AIS control and management plans and invasive species training for natural resources managers, and Objectives 7.2 and 7.6 regarding development of guidance documents and protocols, and identification of gaps and expanding research relevant to control and eradication measures to address established ANS.

ptai	tus:	Complete			
Star	rt Date:	1 October 2015			
End	Date, if applicable:	30 September 2017			
Lead Organization: Virginia Department of Game and Inland Fisheries / Todd Engelmeyer					
Part	tner Organization(s):[Natural Resource Protection Dogs,	LLC.		
	L				
Fun	ding Amount and So	ource(s)			
		Source(s)	\$ Amount - FY 10	6 \$ Amount - FY 17	\$ Amount - FY 18
\boxtimes	Federal Agenc	y USFWS (via MAPAIS)	8,500	0	0
	State Governmen	t			
	Local Governmen	t			
	Tribal Governmen	t			
	Academic Institution	n			
	NGO)			
	Othe	r			
		Total Funding for Activi	ty 8.500	0	0

0

	Coc	ordination	\$ Amount FY 16	\$ Amount FY 17		\$ Amount FY 18			
		Objective 1.1: Strengthen the coordination capacity of the ANSTF							
		Objective 1.2: E	valuate the ability of statutory d objectives	authorities, regulati	ons, and progra	ms necessary to in	nplement		
		Objective 1.3: Fa	acilitate the development and	continued effective	ness of State an	d interstate ANS m	nanagement		
		Objective 1.4: Coordinate the development and implementation of ANSTF- approved species control and management plans and pathway management plans							
		Objective 1.5: C	Objective 1.5: Cooperate with nations that have neighboring waters and shared pathways with the United States to prevent, detect, and control ANS						
	Prev	rention	\$ Amount FY 16	\$ Amount FY 17		\$ Amount FY 18			
		Objective 2.1: Ta	ake steps to interdict specific p asures	athways by develop	oing and implen	nenting guidance	and		
		Objective 2.2: Fa	acilitate use of science-based r e introduction of ANS or poter	isk assessment and s	screening proce	edures to assess an	d prioritize		
		Objective 2.3: Ex	kpand training and use of the I I by natural resource manager	Hazard Analysis and		Point (HACCP) pro	gram into		
\boxtimes	ERD	RR	\$ Amount FY 16 8,500	\$ Amount FY 17	0	\$ Amount FY 18	0		
		Objective 3.1: Fa	acilitate surveys and monitorin	g to detect ANS					
		Objective 3.2: M	ake taxonomic and ecological	information and ex	pertise readily a	vailable			
	•	Objective 3.3: In	crease public and industry inv	olvement in early de	etection and rap	oid response progr	ams		
		Objective 3.4: Fa	acilitate development of rapid	response contingen	cy plans				
		Objective 3.5: Bu	uild capacity to respond rapidl	y to invasions					
\boxtimes	Cont	trol	\$ Amount FY 16 0	\$ Amount FY 17	0	\$ Amount FY 18)		
	•	Objective 4.1: Su	upport and evaluate ANSTF-ap	proved control and	management p	lans			
		Objective 4.2: In	crease invasive species trainin	g for natural resourc	e managers and	d leverage particip	ation		
		Objective 4.3: Evor eradication	valuate the benefits and risks a	ssociated with the c	ommercial harv	est of ANS as a me	ans of control		
		Objective 4.4: Er	courage an Integrated Pest M	anagement (IPM) ap	proach to mana	age existing ANS p	opulations.		
	Rest	coration	\$ Amount FY 16	\$ Amount FY 17		\$ Amount FY 18			
		Objective 5.1: Re	estore impacted ecosystems						
		Objective 5.2: Address and provide technical assistance for invasive species management before, during, and after habitat restoration projects							

	Edu	cation	\$ Amount FY 16	\$ Amount FY 17		\$ Amount FY 18				
			Increase understanding among to ons that can be taken to prevent a		of the problems	and impacts associated with				
		Objective 6.2:	Objective 6.2: Disseminate ANS outreach and technical guidance materials to target audiences							
		related to ANS								
			Promote awareness of the ANSTF and to legislators and other decis		nd provide edu	cational briefings on ANS threats				
\boxtimes	Rese	earch	\$ Amount FY 16 0	\$ Amount FY 17	0	\$ Amount FY 17 0				
		Objective 7.1: community	Develop and maintain a list of AN	S research prioritie	es; communicate	e this list to the scientific				
	•	Objective 7.2: ANS	Develop and maintain guidance of	documents, protoc	ols, and best ma	anagement practices related to				
		Objective 7.3:	Track the progress of research act	ivities funded or p	rioritized by the	ANSTF				
		Objective 7.4:	Support development of socio-ec	onomic research to	o quantify the e	conomic impact of ANS				
		Objective 7.5:	Support research on interdiction	methods for specif	ic pathways of /	ANS3				
	•		Support efforts to identify gaps a S that have become established	nd expand research	h relevant to co	ntrol and eradication measures				
		Objective 7.7:	Encourage research to develop sp	pecies invasion-risk	forecast tools					
		Objective 7.8:	Support existing databases and g	lobal database net	works					
	Fund	ding	\$ Amount FY 16	\$ Amount FY 17		\$ Amount FY 18				
		Objective 8.1:	Secure dedicated, long-term func	ling for the ANSTF	Strategic Plan a	ctions				
			Optimize use of current funding f l agencies and additional partners		y engaging pote	ential resources and programs				
		Objective 8.3:	Develop a list of ANS funding price	orities						
Tot	al Fu	nding:	\$ Amount FY 16 8,500	\$ Amount FY 17	0	\$ Amount FY 18 0				
Ade	dition	nal Comments	(Optional):							
Do	cume	ents and Image	es (Optional)							
Atta	chme	nt: NutriaDetecti	on Dogs 2015_Final Report_Engelmey	er2017.pdf						
		onal Projects	•							
(Yes	Please continue by entering in	ntormation for the	e next project (on the following pages				

Accomplishm	ents and O	ngoing Efforts:					
Activity Title:	Small Grant	Project: Economic Analysis of	AIS Risk and Risk Reduction	in the Bloodworm Trade			
Activity Descr	ctivity Description: Goals, activities, implementation steps, outcomes, and linkage to ANSTF Strategic Plan:						
coast to the Chee ecological and so expanded upon Two levels of attempt is made and consumers v in the shipment of approaches was Cost effects were impact of change markets, he evalu The project spending on AIS fleshed out with of their establish all three species. Bloodworm in tandem with ti in the industry, so for bloodworms. This Activity impacts of ANS, r introduction pati	sapeake Bay recial aspects of the previous references were a to mitigate riswhen risk-miti of live bloodwa project object on sidered in packing report was wrespect to the ment and attended the conomic customers in he findings deuch that the horizonto of the problem regarding interpretation of supports Object of the problem regarding interpretation regard	d to evaluate the economics of the trade in bloodworms, and the trade in bloodworms, and esearch by considering the economics of the trade in bloodworms, and esearch by considering the economics of introduction), discounted gating practices are implement forms and the likelihood of unsective, utilizing findings from endited in the wider context of both factorial for welfare effects in mainteen as a white paper, discussers and measure earlier of the wider the paper, discussers management and measure earlier to manage them. We used to so the Mid-Atlantic states and Case of non-market costs is described above, we deduced the paper of AIS introductions might expectives 7.4 and 7.5 of the ANS rediction of specific AIS pathwords in the paper of the ANS rediction of specific AIS pathwords in the paper of the ANS rediction of specific AIS pathwords in the ANS redicti	I worldwide. Building on earl in collaboration with reservation of ecological impacts of day relevant probabilities; and receive the several approaches had intended introductions. Est arlier bloodworm research rector and product markets. In only earn livelihoods supplying the costs of successful in the product of the sample of hitch alifornia prefer to receive the latter of the sample of hitch alifornia prefer to receive the latter of the sample of hitch alifornia prefer to receive the latter of the sample of hitch alifornia prefer to receive the latter of the sample of hitch alifornia prefer to receive the latter of the sample of hitch alifornia prefer to receive the latter of the sample of hitch alifornia prefer to receive the latter of the sample of hitch alifornia prefer to receive the latter of the sample of hitch alifornia prefer to receive the latter of the sample of hitch alifornia prefer to receive the latter of the sample of hitch alifornia prefer to receive the latter of the sample of hitch alifornia prefer to receive the latter of the sample of hitch alifornia prefer to receive the latter of the sample of hitch alifornia prefer to receive the latter of the sample of hitch alifornia prefer to receive the latter of the	rlier research (supported archers involved in that isk reduction in the block of an introduction (i.e., thend, secondly, as the cost we been proposed for reimating the cost of implegarding the efficacy of a factor markets, Dr. Wieng that packing material. Toach for determining onestablishment of an AIS. If the bloodworm traditions is the bloodworm traditions in the problem is an obstatte problem is not who wormweed. Tesearch into the socioe objective 2.2 regarding	d by MAPAIS) on the earlier work, Dr. Wielan odworm trade. e scenario in which no is incurred by producer. educing incidental biotal ementing those risk reduction practices land evaluated the I. Regarding product ptimal levels of That discussion was e and associated costs hate prevention costs for search allows. In wormweed, From that is to reforming practice lesale and retail demand conomic costs and arisk assessment of AIS.		
	<u> </u>	niversity of Maryland / J. Trom					
raithei Olgani	ization(s):	inversity of Maryland 73. Hom	biey				
Funding Amo	_ 		<u> </u>				
-unung Amo	unt and 50	Source(s)	\$ Amount - FY 16	\$ Amount - FY 17	\$ Amount - FY 18		
⊠ Fed€	eral Agency	USFWS (via MAPAIS)	2,256	18,174	0		
☐ State G	iovernment						
☐ Local G	overnment						
Tribal G	overnment						
☐ Academic	Institution						
	NGO						
	Other						

Total Funding for Activity 2,256

18,174

0

	Coo	rdination	\$ Amount FY 16	\$ Amount FY 17		\$ Amount FY 18			
		Objective 1.1: St	rengthen the coordination cap	acity of the ANSTF					
		Objective 1.2: Ev	valuate the ability of statutory a d objectives	uthorities, regulati	ons, and progra	ms necessary to in	nplement		
		Objective 1.3: Fa	acilitate the development and c	ontinued effective	ness of State an	d interstate ANS n	nanagement		
		Objective 1.4: Co	pordinate the development and ans and pathway management	•	of ANSTF- appro	ved species contro	ol and		
		Objective 1.5: Cooperate with nations that have neighboring waters and shared pathways with the United States to prevent, detect, and control ANS							
\boxtimes	Prev	ention	\$ Amount FY 16	\$ Amount FY 17		\$ Amount FY 18	0		
		Objective 2.1: Ta	ake steps to interdict specific pa asures	thways by develor	oing and implen	nenting guidance	and		
		-	ncilitate use of science-based ris e introduction of ANS or potent			edures to assess an	d prioritize		
	Objective 2.3: E		spand training and use of the H I by natural resource managers	azard Analysis and		Point (HACCP) pro	ogram into		
	ERDI	RR	\$ Amount FY 16	\$ Amount FY 17		\$ Amount FY 18			
		Objective 3.1: Fa	cilitate surveys and monitoring	to detect ANS					
		Objective 3.2: M	ake taxonomic and ecological i	nformation and ex	pertise readily a	vailable			
		Objective 3.3: In	crease public and industry invo	lvement in early de	detection and rapid response programs				
		Objective 3.4: Facilitate development of rapid response contingency plans							
		Objective 3.5: Bo	uild capacity to respond rapidly	to invasions					
	Cont	trol	\$ Amount FY 16	\$ Amount FY 17		\$ Amount FY 18			
		Objective 4.1: Su	upport and evaluate ANSTF-app	proved control and	management p	olans			
		Objective 4.2: In	crease invasive species training	for natural resour	ce managers an	d leverage particip	ation		
		Objective 4.3: Evaluate the benefits and risks associated with the commercial harvest of ANS as a means of correction							
	Objective 4.4: Encourage an Integrated Pest Management (IPM) approach to manage existing ANS population								
	Rest	toration	\$ Amount FY 16	\$ Amount FY 17		\$ Amount FY 18			
		Objective 5.1: Re	estore impacted ecosystems						
		Objective 5.2: A habitat restorati	ddress and provide technical as on projects	sistance for invasiv	e species mana	gement before, di	uring, and after		

	Edu	cation	\$ Amount FY 16 0	\$ Amount FY 17	0	\$ Amount FY 18 0			
			Increase understanding among t ns that can be taken to prevent a		of the problems	and impacts associated with			
		Objective 6.2:	Disseminate ANS outreach and te	echnical guidance r	materials to targ	et audiences			
		related to ANS							
			Promote awareness of the ANSTF and to legislators and other decis		nd provide edu	cational briefings on ANS threats			
\boxtimes	Rese	earch	\$ Amount FY 16 2,256	\$ Amount FY 17	18,174	\$ Amount FY 17			
		community	Develop and maintain a list of AN	•					
		ANS	Develop and maintain guidance of	documents, protoc	iols, and best ma	anagement practices related to			
		Objective 7.3: Track the progress of research activities funded or prioritized by the ANSTF							
		Objective 7.4:	Support development of socio-ed	conomic research t	o quantify the e	conomic impact of ANS			
		Objective 7.5: Support research on interdiction methods for specific pathways of ANS3							
		Objective 7.6: Support efforts to identify gaps and expand research relevant to control and eradication measures to address ANS that have become established							
		Objective 7.7:	Encourage research to develop s	pecies invasion-risk	c forecast tools				
		Objective 7.8:	Support existing databases and g	olobal database net	tworks				
	Fund	ding	\$ Amount FY 16	\$ Amount FY 17		\$ Amount FY 18			
		Objective 8.1: Secure dedicated, long-term funding for the ANSTF Strategic Plan actions							
		Objective 8.2: Optimize use of current funding for ANS activities by engaging potential resources and programs within Federal agencies and additional partners							
		Objective 8.3:	Develop a list of ANS funding prid	orities					
Tot	al Fu	nding:	\$ Amount FY 16 2,256	\$ Amount FY 17	18,174	\$ Amount FY 18 0			
Ad	ditior	nal Comments	(Optional):						
			ummer and fall 2016, before FFY2017		•				
luna	illocate	ed FFY2016 grant	t funds. The project otherwise fells w	vithin our FFY2017 "y	ear-class" of SPG	projects.			
Do	cume	ents and Image	es (Optional)						
Atta	achme	nt: EconomcAna	lysis AISRisks Bloodworm Trade_Final F	Report_Wieland2016	.pdf.				
A	dditi	onal Projects	to Report?						
(i	Yes	Please continue by entering in	nformation for the	e next project (on the following pages			

0

Acti	vity Title: Small Grant P	roject: Pymatuning Invasive Specie	es Boat Inspection Static	ons				
Acti	vity Description: Goals	, activities, implementation s	teps, outcomes, and	l linkage to ANSTF S	trategic Plan:			
gree and Gran fund were 309 cond	atuning Reservoir. The pilo t boaters as they launch an asked for voluntary removant. The funds from this projets also were used to support Over the course of 2016, 2, a willing to participate in a suboaters chose not to participated. In 2016, aquatic species we atuning included Eurasian verse.	ere to support the start-up of a pilo of program included training of vol- d retrieve boats during the heavies al. Launch stewards provided infor- ect were used to develop a cohesiv t AIS disposal and cleaning appara ,181 surveys were completed. Whe survey and boat check; 88 boaters of ipate. Thus, during the two season ere removed from 148 boats (7% o watermilfoil, zebra mussels, elodea	unteer and paid staff co st of the boating season mational material on Alt we look to the program is tus for the stations. en boaters were approachose not to participate is, 4,513 boaters were en f those surveyed). Specia, curly-leaf pondweed, v	ordinated by Pymatunir . The launch stewards in S prevention provided be n the form of signage, a ched by launch steward . In 2017, 1,935 surveys neountered, with 4,116 be ies removed from boats wild celery, and fanwort	ng State Park staff to nspected boats for AIS by Pennsylvania Sea ttire, and stations. The s and asked if they were completed, and poat inspections being not last on . In 2017, aquatic			
spec	ies were removed from 182 sion watermilfoil, elodea, ci	2 boats surveyed (10%). Species re urly-leaf pondweed, water lily, wild	moved in 2017 from boo I celery, narrowleaf catta	ats not last on Pymatuni ail, and fanwort.	ng Reservoir included			
distr		ed AIS education material including on themed drink coasters to local re						
Penr Ohio	nsylvania Sea Grant. In addi o boat launches on Pymatur	ition to the launch steward programing Reservoir. The stations were been over the 2017 Labor Day weeks	m the project was able t pased on a design provid	o install 16 AIS disposal ded by NY State. The dis	stations at all PA and sposal stations were			
Jame	estown Marina and Linesvill	le Marina for voluntary decontamir	nation of incoming and	outgoing boat traffic.				
Stat	The project was considered a dramatic success, and has spawned significant interest in implementation of similar campaigns and programs at other lakes, reservoirs, and hoat launches throughout the state.							
Star	This Activity supports Obje	ectives 2.1 of the ANSTF Strategic P Official and monitoring of the Strategic P	lan by implementing m	easures to interdict a sp	ecific AIS pathway, and			
incre	asing public involveme nt i	n EDRR-programs. It also addresse	s Objective 4.2 ,by provid	ding AIS training for nat	ural resources			
Emech	@ateaifdalpydeiceabyling 20	6eptemberயிர்சுவர்களுகர்கள்	Objectives 6.1 6.2, and	6.3 by providing educat	tional materials to the			
		and natural resource managers reg matuning State Park, Stacie Hall	aruing AIS Issues and Di	est management practic	es.			
	- <u>-</u>	Thataning State Fall, State Flair						
Part	ner Organization(s):			*				
	L							
Fund	ding Amount and Sou	ırce(s)						
		Source(s)	\$ Amount - FY 16	\$ Amount - FY 17	\$ Amount - FY 18			
\boxtimes	Federal Agency	USFWS (via MAPAIS)	0	9,400	0			
	State Government							
	Local Government							
	Tribal Government							
	Academic Institution							
	NGO							
	Other							
		Total Funding for Activity		0.400				
		Total Funding for Activity	lo l	9,400	0			

	Coc	rdination	\$ Amount FY 16		\$ Amount FY 17		\$ Amount FY 18			
		Objective 1.1: S	trengthen the coordinat	ion capa	city of the ANSTF					
		Objective 1.2: E ANSTF goals an	valuate the ability of sta d objectives	tutory au	thorities, regulation	ons, and progra	ms necessary to in	nplement		
		Objective 1.3: Fa	acilitate the developme	nt and co	ntinued effective	ness of State an	d interstate ANS m	anagement		
			oordinate the developm lans and pathway mana			of ANSTF- appro	ved species contro	ol and		
		Objective 1.5: Cooperate with nations that have neighboring waters and shared pathways with the United States to prevent, detect, and control ANS								
\boxtimes	Prev	ention	\$ Amount FY 16 0		\$ Amount FY 17	9,400	\$ Amount FY 18	0		
	•	Objective 2.1: Tappropriate me		re steps to interdict specific pathways by developing and implementing guidance and sures						
		Objective 2.2: Fa	acilitate use of science-b e introduction of ANS o	ased risk potentia	assessment and s	screening proce ern	dures to assess an	d prioritize		
		Objective 2.3: Expand training and use o work conducted by natural resource ma			zard Analysis and	Critical Control	Point (HACCP) pro	gram into		
\boxtimes	ERDI	RR	\$ Amount FY 16 0		\$ Amount FY 17	0	\$ Amount FY 18	0		
		Objective 3.1: Fa	acilitate surveys and mo	nitoring t	o detect ANS					
N.	Objective 3.2: Make taxonomic and ecological information and expertise readily available									
		Objective 3.3: In	crease public and indus	try involv	ement in early de	etection and rap	id response progr	ams		
		Objective 3.4: Fa	acilitate development of	rapid res	sponse contingen	cy plans				
38		Objective 3.5: B	uild capacity to respond	rapidly t	o invasions					
\boxtimes	Cont	rol	\$ Amount FY 16 0		\$ Amount FY 17	0	\$ Amount FY 18	0		
		Objective 4.1: So	upport and evaluate AN	STF-appro	oved control and	management p	lans			
		Objective 4.2: In	crease invasive species	training f	or natural resourc	e managers and	d leverage particip	ation		
		Objective 4.3: Exor eradication	aluate the benefits and	risks asso	ociated with the c	ommercial harv	est of ANS as a me	ans of control		
		Objective 4.4: Encourage an Integrated Pest Management (IPM) approach to manage existing ANS populations.								
	Rest	oration	\$ Amount FY 16		\$ Amount FY 17		\$ Amount FY 18			
		Objective 5.1: Re	estore impacted ecosyst	ems						
		Objective 5.2: A habitat restorati	ddress and provide tech on projects	nical assi	stance for invasiv	e species mana	gement before, du	ring, and after		

\boxtimes	Edu	cation	\$ Amount FY 16 0		\$ Amount FY 17	0	\$ Amount FY 18 0		
			Increase understand ons that can be taker			of the problems	and impacts associated with		
		Objective 6.2:	Disseminate ANS ou	itreach and te	echnical guidance r	nnical guidance materials to target audiences			
		related to ANS	5				ces and other outreach materials		
			Promote awareness and to legislators ar			nd provide edu	cational briefings on ANS threats		
	Rese	earch	\$ Amount FY 16		\$ Amount FY 17		\$ Amount FY 17		
		community					e this list to the scientific anagement practices related to		
		ANS	·	-	•	•	3		
		Objective 7.3:	Track the progress o	of research act	tivities funded or p	rioritized by the	ANSTF		
	Objective 7.4: Support development of socio-economic research to quantify the economic impact of ANS								
	Objective 7.5: Support research on interdiction methods for specific pathways of ANS3								
	Objective 7.6: Support efforts to identify gaps and expand research relevant to control and eradication measures to address ANS that have become established								
Objective 7.7: Encourage research to develop species invasion-risk forecast tools									
		Objective 7.8:	Support existing dat	tabases and g	llobal database net	works			
	Fund	ding	\$ Amount FY 16		\$ Amount FY 17		\$ Amount FY 18		
		Objective 8.1:	Secure dedicated, lo	ng-term fund	ling for the ANSTF	Strategic Plan a	ctions		
		-	Optimize use of curr agencies and additi	_	•	engaging pote	ential resources and programs		
		Objective 8.3:	Develop a list of ANS	5 funding pric	orities				
Tota	al Fui	nding:	\$ Amount FY 16 0		\$ Amount FY 17	9,400	\$ Amount FY 18 0		
Add	dition	al Comments	(Optional):						
				_					
							Δ.		
Do	cume	nts and Image	es (Optional)						
Atta	chme	nt: PymatuningB	oatInspStations_Finalf	Report_SH2017	7.pdf		Vi Vi		
A	Additional Projects to Report?								
(Yes	Please continue by	y entering in	formation for the	next project	on the following pages		

C

Ongoing

Activity Title:

Status:

Small Grant Project: The use of environmental DNA (eDNA) to detect the emergent infectious pathogens in amphibian popul

Activity Description: Goals, activities, implementation steps, outcomes, and linkage to ANSTF Strategic Plan:

Ranavirus (RV) and Batrachochytrium dendrobatidis (Bden) are invasive, emergent infectious pathogens that have been documented in hundreds of species of amphibians, spread through the international trade of animals, and implicated in the mass mortality of over 20 species. Disease-induced mortality events often occur at breeding ponds where amphibians congregate in larger numbers. Detection can prove difficult in these areas because dead animals are quickly consumed by conspecifics or decompose before investigators can collect the tissue samples needed for genetic detection of these pathogens. However, the collection of environmental DNA (eDNA) from the water column of infected ponds has been shown to detect these pathogens before, during, and after active outbreaks. This project is designed to teach eDNA collection techniques to NGO staff, environmental educators, citizen scientists, and government agencies, and then to evaluate their effectiveness as early response units in detecting amphibian disease outbreaks.

In the spring of 2016, protocols were established to detect RV and Bden from eDNA samples by using extracted DNA from infected individuals, and filtered water samples from sites where these diseases have been detected. In the spring of 2017, the investigators conducted sessions to train participants on how to collect eDNA samples, and to instruct them on preventing disease transmission during sampling and other fieldwork. Afterwards, participants were assigned ponds that have experienced disease outbreaks, and collected eDNA samples from ponds before, and after, tadpoles completed metamorphosis. We will evaluate participant-sampling efficiency by collecting independent samples within 48-hours of participant-collected samples. In total, we will screen 12 ponds where diseases have been detected, and 12 ponds that are either in close proximity to those sites, or ponds that experience active mortality events.

This Activity supports Objectives 3.1, 3.3, and 3.5 of the ANSTF Strategic Plan by facilitating surveys and monitoring of AIS, and by increasing public involvement in EDRR programs; thereby building capacity to respond rapidly to invasions. It also addresses Objective 4.2 by providing AIS training for natural resources managers and by leveraging agency and public participation, and Objective 7.2 by developing protocols related to ANS detection and monitoring.

Start Date:		1 October 2016							
End	Date, if applicable:	30 June 2018	30 June 2018						
Lea	d Organization:	Pennsylvania State University / Dr. James Julian							
Partner Organization(s)		PA Fish and Boat Commission; Shaver's Creek Environmental Education Center, Juniata Valley Audubon Society, Clearwater Conservancy, PA Amphibian and Reptile Survey.							
Fun	ding Amount and S	ource(s)							
		Source(s)	\$ Amount - FY 16	\$ Amount - FY 17	\$ Amount - FY 18				
X	Federal Agend	USFWS (via MAPAIS)	0	7,044	0				
	State Governme	nt		7,					
	Local Governme	nt							
	Tribal Governme	nt							
	Academic Institution	on							
	NG	0							
	Oth	er							
		Total Funding for Activ	rity 0	7,044	0				

	Coc	ordination	\$ Amount FY 16		\$ Amount FY 17		\$ Amount FY 18				
		Objective 1.1: S	trengthen the coor	dination capa	city of the ANSTF	:					
		Objective 1.2: E ANSTF goals an	valuate the ability of objectives	of statutory au	thorities, regulat	ions, and prograi	ms necessary to in	nplement			
		Objective 1.3: F plans	acilitate the develo	pment and co	ntinued effective	eness of State and	d interstate ANS m	nanagement			
Objective 1.4: Coordinate the development and implementation of ANSTF- approved species contribution management plans and pathway management plans											
		Objective 1.5: C	ooperate with nati ect, and control AN	ons that have		ers and shared p	athways with the	United States			
	Prev	rention	\$ Amount FY 16		\$ Amount FY 17		\$ Amount FY 18				
		Objective 2.1: T appropriate me	ake steps to interdi asures	ict specific pat	hways by develo	ping and implem	enting guidance	and			
		Objective 2.2: F	acilitate use of scie				dures to assess an	d prioritize			
		Objective 2.3: E	pathways for the introduction of ANS or potential species of concern Objective 2.3: Expand training and use of the Hazard Analysis and Critical Control Point (HACCP) program into work conducted by natural resource managers								
×	ERD	RR	\$ Amount FY 16 0		\$ Amount FY 17	7,044	\$ Amount FY 18	0			
		Objective 3.1: F	acilitate surveys an	d monitoring	to detect ANS						
		Objective 3.2: Make taxonomic and ecological information and expertise readily available									
		Objective 3.3: Increase public and industry involvement in early detection and rapid response programs									
		Objective 3.4: Facilitate development of rapid response contingency plans									
	•	Objective 3.5: Build capacity to respond rapidly to invasions									
\boxtimes	Con	trol	\$ Amount FY 16 0		\$ Amount FY 17	0	\$ Amount FY 18	0			
		Objective 4.1: S	upport and evaluat	te ANSTF-appr	oved control and	l management pl	ans				
		Objective 4.2: lr	ocrease invasive sp	ecies training (for natural resour	ce managers and	l leverage particip	ation			
		Objective 4.3: Evaluate the benefits and risks associated with the commercial harvest of ANS as a means of control or eradication									
		Objective 4.4: Encourage an Integrated Pest Management (IPM) approach to manage existing ANS populations.									
	Rest	toration	\$ Amount FY 16		\$ Amount FY 17		\$ Amount FY 18				
		Objective 5.1: Restore impacted ecosystems									
		Objective 5.2: A habitat restorat	ddress and provide	e technical ass	istance for invasi	ve species manaç	gement before, du	ıring, and after			

	Edu	cation	\$ Amount FY 16	5	\$ Amount FY 17		\$ Amount FY 18	
			Increase understants that can be tal		ne general public ond control ANS	of the problems a	and impacts assoc	iated with
		Objective 6.2:	Disseminate ANS	outreach and te	chnical guidance i	materials to targe	et audiences	
		related to ANS	5		uments, best man			
		Objective 6.4: and solutions	Promote awarene and to legislators	ess of the ANSTF and other decisi	and its activities a on makers	nd provide educ	ational briefings	on ANS threats
\boxtimes	Rese	earch	\$ Amount FY 16	0	\$ Amount FY 17	0	\$ Amount FY 17	0
		community	Develop and maintain a list of ANS research priorities; communicate this list to the scientific Develop and maintain guidance documents, protocols, and best management practices related to					
		ANS	•	3				
		Objective 7.3:	Track the progres	ss of research acti	vities funded or p	rioritized by the	ANSTF	
		Objective 7.4:	Support develop	ment of socio-eco	onomic research t	o quantify the ed	onomic impact o	f ANS
		Objective 7.5:	Support research	on interdiction n	nethods for specif	ic pathways of A	NS3	
	Objective 7.6: Support efforts to identify gaps and expand research relevant to control and eradication measures to address ANS that have become established							
		Objective 7.7:	Encourage resear	ch to develop sp	ecies invasion-risk	forecast tools		
		Objective 7.8:	Support existing	databases and gl	obal database net	tworks		
	Fund	ding	\$ Amount FY 16		\$ Amount FY 17		\$ Amount FY 18	
		Objective 8.1:	Secure dedicated	, long-term fundi	ng for the ANSTF	Strategic Plan ac	tions	
			Optimize use of c agencies and add		or ANS activities by	y engaging pote	ntial resources an	d programs
		Objective 8.3:	Develop a list of A	ANS funding prior	rities			
Tota	al Fui	nding:	\$ Amount FY 16	D	\$ Amount FY 17	7,044	\$ Amount FY 18	0
Add	dition	al Comments	(Optional):					
						Ŧ		
Doo	ume	nts and Image	es (Optional)					
Atta	chmei	nt: eDNADetectio	on Emergent Pathog	ens_ProgRpt2017_	_JJulianDec2017			
Ac	ditio	onal Projects	to Report?					
(Yes	Please continue	e by entering inf	formation for the	e next project o	n the following	pages

C

Activity Title:

Small Grant Project: An analysis of the recreational vector and associated pathways to aid in the prevention of invasive speciintroductions in Mid-Atlantic waterways

Activity Description: Goals, activities, implementation steps, outcomes, and linkage to ANSTF Strategic Plan:

Recreational fishing is a known vector for the transport and dispersal of invasive species, with key pathways including live bait, angling gear, and boating gear. In Maryland, live bait has resulted in the establishment of various species of non-native worms, minnow, and crayfish, with Eurasian watermilfoil and hydrilla suspected to have been introduced via the boating gear pathway, and didymo suspected to have been introduced by angling gear. These and other invasive species have the potential to cause serious ecological and economic impacts throughout the Mid-Atlantic Region, with state agencies taking preventative measures such as boat and trailer inspections, and installing angling gear wash stations at popular fishing sites.

The objective of this study is to contribute to AIS prevention and management through a pathway analysis. A pathway analysis is prioritized in the Maryland Aquatic Nuisance Species Management Plan and can be used to identify points whose disruption could meaningfully prevent introduction of multiple invasive species. We will utilize data from a recent survey that collected information on fishing trip location and frequency in non-tidal waterways in Maryland. The geographic distribution of anglers and angler trips for each key pathway (live bait, fishing gear, boating gear) will be analyzed using ArcGIS. Pathway risk will be calculated by multiplying the percentage of anglers and angler trips involved in the pathway by the proportion of aquatic invasive species that are found in each subwatershed and can be transported by each pathway. This information will be used to rank pathways by importance using procedures developed by the National Invasive Species Council and Aquatic Nuisance Species Task Force.

This project will contribute to better management of invasive species pathways through a written report, fact sheets, a peer-reviewed publication, and targeted outreach efforts to resource managers and key recreational angling stakeholders.

This Activity supports Objective 1.3 of the ANSTF Strategic Plan by addressing the pathways analysis priority of the Maryland Aquatic Nuisance Species Management Plan, and Objective 2.2 by using science-based risk assessment procedures to assess and prioritize such pathways. It also addresses Objective 7.7 by sponsoring research to develop species invasion-risk forecast tools.

Status:		Ongoing								
Star	rt Date:	1 October 2017								
End	Date, if applicable:	July 2019								
Lead	d Organization:	Morgan State University PEARL Laboratory / Dr. Scott Knoche								
Part	ner Organization(s):	Maryland Department of Natural Res	sources							
Fun	Funding Amount and Source(s)									
		Source(s)	\$ Amount - FY 16	\$ Amount - FY 17	\$ Amount - FY 18					
\boxtimes	Federal Agend	USFWS (via MAPAIS)	0	0	12,070					
	State Governmen	nt								
	Local Governmen	nt								
	Tribal Governme	nt								
	Academic Institution	on								
	NG	0								
	Otho	er								
		Total Funding for Activity	0	0	12,070					

\boxtimes	Coo	ordination	\$ Amount FY 16 0	\$ Amount FY 17	0	\$ Amount FY 18 0			
		Objective 1.1: S	trengthen the coordination capa	acity of the ANSTF					
		Objective 1.2: E ANSTF goals an	valuate the ability of statutory and objectives	uthorities, regulati	ons, and prograi	ms necessary to implement			
		Objective 1.3: Fa	acilitate the development and c	ontinued effective	ness of State and	d interstate ANS management			
		Objective 1.4: C	oordinate the development and		of ANSTF- approv	ved species control and			
		management plans and pathway management plans Objective 1.5: Cooperate with nations that have neighboring waters and shared pathways with the United S to prevent, detect, and control ANS							
\boxtimes	Prev	ention	\$ Amount FY 16 0	\$ Amount FY 17	0	\$ Amount FY 18 12,070			
		Objective 2.1: Ta	ake steps to interdict specific pa asures	thways by develop	oing and implem	enting guidance and			
	Objective 2.2: Fa		acilitate use of science-based ris			dures to assess and prioritize			
		pathways for the introduction of ANS or potential species of concern Objective 2.3: Expand training and use of the Hazard Analysis and Critical Control Point (HACCP) prowork conducted by natural resource managers							
	ERD	RR	\$ Amount FY 16	\$ Amount FY 17		\$ Amount FY 18			
		Objective 3.1: Fa	acilitate surveys and monitoring	to detect ANS					
		Objective 3.2: M	lake taxonomic and ecological i	nformation and ex	pertise readily av	vailable			
		Objective 3.3: Increase public and industry involvement in early detection and rapid response programs							
		Objective 3.4: Facilitate development of rapid response contingency plans							
		Objective 3.5: B	uild capacity to respond rapidly	to invasions					
	Conf	trol	\$ Amount FY 16	\$ Amount FY 17		\$ Amount FY 18			
		Objective 4.1: Se	upport and evaluate ANSTF-app	roved control and	management pl	ans			
		Objective 4.2: In	crease invasive species training	for natural resource	ce managers and	l leverage participation			
		Objective 4.3: Evaluate the benefits and risks associated with the commercial harvest of ANS as a means of or eradication							
		Objective 4.4: Er	ncourage an Integrated Pest Ma	nagement (IPM) ap	proach to mana	ge existing ANS populations.			
	Rest	toration	\$ Amount FY 16	\$ Amount FY 17		\$ Amount FY 18			
		Objective 5.1: R	estore impacted ecosystems						
		Objective 5.2: A habitat restorat		sistance for invasiv	e species manaç	gement before, during, and after			

	Edu	cation	\$ Amount FY 16	\$ Amount FY 17		\$ Amount FY 18				
		•	Increase understanding among the ons that can be taken to prevent ar	•	of the problems	and impacts associated with				
		Objective 6.2:	Disseminate ANS outreach and te	chnical guidance i	materials to targ	et audiences				
		related to ANS								
			Promote awareness of the ANSTF and its active and to legislators and other decision makers		nd provide edu	cational briefings on ANS threats				
\boxtimes	Rese	earch	\$ Amount FY 16 0	\$ Amount FY 17	0	\$ Amount FY 17 0				
		community	Develop and maintain a list of AN	·						
		ANS	Develop and maintain guidance o	e documents, protocols, and best management practices related to						
		Objective 7.3: Track the progress of research activities funded or prioritized by the ANSTF								
		Objective 7.4: Support development of socio-economic research to quantify the economic impact of ANS								
		Objective 7.5: Support research on interdiction methods for specific pathways of ANS3								
		Objective 7.6: Support efforts to identify gaps and expand research relevant to control and eradication measures to address ANS that have become established								
Objective 7.7: Encourage research to develop species invasion-risk forecast tools										
		Objective 7.8:	Support existing databases and g	lobal database net	tworks					
	Fund	ding	\$ Amount FY 16	\$ Amount FY 17		\$ Amount FY 18				
		Objective 8.1:	Secure dedicated, long-term fund	ling for the ANSTF	Strategic Plan a	ctions				
		Objective 8.2: Optimize use of current funding for ANS activities by engaging potential resources and programs within Federal agencies and additional partners								
		Objective 8.3:	Develop a list of ANS funding price	orities						
Tot	al Fu	nding:	\$ Amount FY 16 0	\$ Amount FY 17	0	\$ Amount FY 18 12,070				
Ad	ditior	nal Comments	(Optional):							
				5 T.						
Do	cume	ents and Image	es (Optional)							
	22									
L_A	Additional Projects to Report?									
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Activity Title:

Small Grant Project: Monitoring to Manage: Determining best population control approaches for the Northern Snakehead, C

Activity Description: Goals, activities, implementation steps, outcomes, and linkage to ANSTF Strategic Plan:

The Jug Bay tidal freshwater marshes located near river mile 45 on the Patuxent River are among the most important marshes of this kind in Maryland. They provide habitat for a wide range of species including a rich fish community. Jug Bay is also a component of the Chesapeake Bay National Estuarine Research Reserve System, a program promoting among other things the protection of these important estuarine habitats. Northern Snakehead, Channa argus, was first discovered in Maryland in 2002, but only recently reported in the Patuxent River watershed (Maryland DNR 2012). Local angler reports and sightings have continued to increase and are now common. Information and understanding of the potential impacts of Northern Snakehead within Jug Bay is limited, but its increased presence has created a sense of urgency to control its population.

The main objectives of this study are: (1) to start the collection of data to develop a monitoring and management strategy for snakeheads within the Jug Bay area, and (2) to test different approaches to control the population. The first goal targets the collection of information about preferred habitat areas ("hotspots") used by snakehead for reproduction and over-wintering areas. Techniques proposed to gather information include trawling, electrofishing, small motor and paddle boats, stand up paddle board (SUP) and UAS (unmanned aerial systems). Once "hotspots" are identified, the second goal is to test the effectiveness of different control approaches such as egg and juvenile removals and targeted fishing.

Because of the nature of this project, the involvement of multiple partners and community members is fundamental to our success. Outreach will be an important component of this study, including communication of results to the public, youth outreach events, engagement of the angler community, and involvement of the public through a monitoring citizen science program.

This Activity supports Objectives 3.1, 3.3, and 3.5 of the ANSTF Strategic Plan by facilitating surveys and monitoring of AIS, and by increasing public involvement in EDRR programs; thereby building capacity to respond rapidly to invasions. It also addresses Objective 4.2 by providing AIS training for natural resources managers and by leveraging agency and public participation, and Objective 7.6 by expanding research relevant to control and eradication measures to address ANS that have become established.

Stat	tus:	Ongoing							
Stai	rt Date:	1 October 2017							
End	Date, if applicable:	31 July 2019	1 July 2019						
Lea	d Organization:	Jug Bay Wetlands Sanctuary / Melinda Fegler							
Part		Chesapeake Bay National Estuarine Research Reserve; USFWS, Friends of Jugs Bay, Maryland Department of Natural Resources							
Fun	ding Amount and S	ource(s)							
		Source(s)	\$ Amount - FY 16	\$ Amount - FY 17	\$ Amount - FY 18				
\boxtimes	Federal Agend	USFWS (via MAPAIS)	0	0	6,885				
	State Governmer	nt							
	Local Governmer	nt							
	Tribal Governmer	nt							
	Academic Institutio	n							
	NG	0							
	Othe	er							
		Total Funding for Activ	rity 0	0	6,885				

	Coc	ordination	\$ Amount FY 16	\$ Amount FY 17		\$ Amount FY 18			
		Objective 1.1: S	Objective 1.1: Strengthen the coordination capacity of the ANSTF						
		Objective 1.2: E	jective 1.2: Evaluate the ability of statutory authorities, regulations, and programs necessary to implement ISTF goals and objectives						
		Objective 1.3: Fa	acilitate the development and	continued effective	ness of State an	d interstate ANS n	nanagement		
		Objective 1.4: C	oordinate the development an lans and pathway managemen		of ANSTF- appro	ved species contro	ol and		
		Objective 1.5: C	ooperate with nations that havect, and control ANS		ers and shared p	athways with the	United States		
	Prev	ention	\$ Amount FY 16	\$ Amount FY 17		\$ Amount FY 18			
		Objective 2.1: Ta appropriate me	ake steps to interdict specific pa asures	athways by develop	oing and implen	nenting guidance	and		
			acilitate use of science-based ri e introduction of ANS or poten			dures to assess an	d prioritize		
		Objective 2.3: E	xpand training and use of the H d by natural resource managers	lazard Analysis and		Point (HACCP) pro	gram into		
	ERDI	RR	\$ Amount FY 16 0	\$ Amount FY 17	0	\$ Amount FY 18	6,885		
		Objective 3.1: Fa	acilitate surveys and monitoring	g to detect ANS					
		Objective 3.2: M	ake taxonomic and ecological	information and exp	pertise readily a	vailable			
		Objective 3.3: In	crease public and industry invo	olvement in early de	etection and rap	id response progr	ams		
		Objective 3.4: Fa	acilitate development of rapid ı	esponse contingen	cy plans				
		Objective 3.5: B	uild capacity to respond rapidly	to invasions					
\boxtimes	Cont	trol	\$ Amount FY 16 0	\$ Amount FY 17	0	\$ Amount FY 18	0		
		Objective 4.1: Si	upport and evaluate ANSTF-ap	proved control and	management p	lans			
		Objective 4.2: In	crease invasive species training	for natural resourc	e managers and	d leverage particip	ation		
		Objective 4.3: Evor eradication	valuate the benefits and risks as	sociated with the c	ommercial harv	est of ANS as a me	eans of control		
		Objective 4.4: Er	ncourage an Integrated Pest Ma	ınagement (IPM) ap	proach to mana	nge existing ANS p	opulations.		
	Rest	coration	\$ Amount FY 16	\$ Amount FY 17		\$ Amount FY 18			
		Objective 5.1: Re	estore impacted ecosystems						
Objective 5.2: Address and provide technical assistance for invasive species management before, habitat restoration projects						gement before, du	ring, and after		

	Edu	cation	\$ Amount FY 16		\$ Amount FY 17		\$ Amount FY 18	
			Increase understa ons that can be tak		he general public ond control ANS	of the problems	and impacts assoc	ciated with
		Objective 6.2:	Disseminate ANS	outreach and te	echnical guidance r	naterials to targ	et audiences	
		related to ANS	S		tuments, best man			
			Promote awarene and to legislators		and its activities a a a sion makers	nd provide edu	cational briefings	on ANS threats
\boxtimes	Rese	earch	\$ Amount FY 16	0	\$ Amount FY 17	0	\$ Amount FY 17	0
		community			IS research prioritie documents, protoc			
		ANS	o c v c rop a r a r r a r	nam galaanee (socaments, protoc	ois, and best me	magement practi	ies related to
		Objective 7.3:	Track the progress	of research ac	tivities funded or p	rioritized by the	ANSTF	
		Objective 7.4:	Support developn	nent of socio-ed	conomic research to	o quantify the e	conomic impact o	f ANS
		Objective 7.5:	Support research	on interdiction	methods for specif	ic pathways of A	NS3	
			Support efforts to S that have becom		nd expand researcl	h relevant to co	ntrol and eradicati	ion measures
		Objective 7.7:	Encourage researc	th to develop s	oecies invasion-risk	forecast tools		
		Objective 7.8:	Support existing d	latabases and g	lobal database net	works		
	Fund	ding	\$ Amount FY 16		\$ Amount FY 17		\$ Amount FY 18	
		Objective 8.1:	Secure dedicated,	long-term fund	ling for the ANSTF	Strategic Plan a	ctions	
			Optimize use of cul agencies and add		for ANS activities by	y engaging pote	ential resources an	d programs
		Objective 8.3:	Develop a list of A	NS funding prid	orities			
Tota	al Fui	nding:	\$ Amount FY 16 0		\$ Amount FY 17	0	\$ Amount FY 18	6,885
Add	dition	al Comments	(Optional):					
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Doc	ume	nts and Image	es (Optional)					
								W
Ac	iditio	onal Projects	to Report?					
(Yes Please continue by entering information for the next project on the following pages							

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Activity Title:

Small Grant Project: Using environmental DNA to detect early stages of the invasion of a destructive freshwater snail

Activity Description: Goals, activities, implementation steps, outcomes, and linkage to ANSTF Strategic Plan:

Invasive species are a threat to biodiversity and economic interests. Early detection of invasion allows for a more rapid response and increases the likelihood of successful remediation of the invaded ecosystem. Potamopyrgus antipodarum, the New Zealand mud snail (NZMS), is a global invader characterized by distinct asexual lineages. NZMS invasion is cause for concern as it has been linked to harmful effects in invaded ecosystems. In the eastern US, NZMS was first noted in Lake Ontario in 1991. NZMS has since been identified in Lake Erie, rivers in upstate New York, and in central Pennsylvania, but the full extent of the NZMS northeastern invasion is both uncertain and likely more extensive.

We propose to further characterize the eastern NZMS invasion through the use of environmental DNA (eDNA). eDNA represents DNA molecules shed from organisms' skin, feces, or other sources, and is maintained for short periods of time in the areas in which the organisms are active. We will sample the water of potential invasion sites, filtering eDNA out and returning the water to the sample sites. In a lab decontaminated of NZMS DNA, we will extract the DNA for use in quantitative PCR. We will make use of primers proven to be both effective and specific for detection of NZMS. Quantitative PCR will allow us to both detect the presence of NZMS and estimate the currently active population at the sample site. These techniques have been proven in lab and at known invasion sites, but have not previously been applied for early detection of NZMS.

Results of this study will be disseminated to relevant government agencies to aid invasion prevention and remediation efforts. More broadly, demonstrating the application of eDNA techniques for early detection will help develop a cutting-edge advantage in ecosystem monitoring.

This Activity supports Objective 3.1 of the ANSTF Strategic Plan by facilitating surveys and monitoring of AIS. It also addresses Objectives 7.2 and 7.6 by developing protocols related to ANS detection and monitoring, and by expanding research relevant to control and eradication measures to address ANS that have become established.

Stat	:us:	Ongoing			
Star	rt Date:	1 October 2017			
End	Date, if applicable:	31 July 2019			
Lea	d Organization:	Pennsylvania State University / [Dr. Ed Levri	· · · · · · · · · · · · · · · · · · ·	
Part	ner Organization(s):	University of Iowa / Dr. Maurine	Neiman.		
Fun	ding Amount and S	ource(s)			
		Source(s)	\$ Amount - FY 16	\$ Amount - FY 17	\$ Amount - FY 18
X	Federal Agenc	USFWS (via MAPAIS)	0	0	15,000
	State Governmer	nt			
	Local Governmer	nt			
	Tribal Governmer	nt			
	Academic Institutio	n			
	NG	0			
	Othe	er			
		Total Funding for Activ	vity 0	0	15,000

	Coordination	\$ Amount FY 16 \$ Amount FY 17 \$ Amount FY 18
	☐ Objective 1	.1: Strengthen the coordination capacity of the ANSTF
		.2: Evaluate the ability of statutory authorities, regulations, and programs necessary to implement Is and objectives
	Objective 1 plans	.3: Facilitate the development and continued effectiveness of State and interstate ANS management
	"	.4: Coordinate the development and implementation of ANSTF- approved species control and ent plans and pathway management plans
		.5: Cooperate with nations that have neighboring waters and shared pathways with the United States detect, and control ANS
	Prevention	\$ Amount FY 16 \$ Amount FY 17 \$ Amount FY 18
	Objective 2	.1: Take steps to interdict specific pathways by developing and implementing guidance and embedding measures
	Objective 2	2: Facilitate use of science-based risk assessment and screening procedures to assess and prioritize or the introduction of ANS or potential species of concern
		.3: Expand training and use of the Hazard Analysis and Critical Control Point (HACCP) program into ucted by natural resource managers
\boxtimes	ERDRR	\$ Amount FY 16 0 \$ Amount FY 17 0 \$ Amount FY 18 15,000
	Objective 3	1.1: Facilitate surveys and monitoring to detect ANS
	☐ Objective 3	3.2: Make taxonomic and ecological information and expertise readily available
	Objective 3	3.3: Increase public and industry involvement in early detection and rapid response programs
	☐ Objective 3	.4: Facilitate development of rapid response contingency plans
	☐ Objective 3	s.5: Build capacity to respond rapidly to invasions
	Control	\$ Amount FY 16 \$ Amount FY 17 \$ Amount FY 18
	Objective 4	.1: Support and evaluate ANSTF-approved control and management plans
	Objective 4	2.2: Increase invasive species training for natural resource managers and leverage participation
	Objective 4 or eradicati	3.3: Evaluate the benefits and risks associated with the commercial harvest of ANS as a means of controlion
	Objective 4	.4: Encourage an Integrated Pest Management (IPM) approach to manage existing ANS populations.
	Restoration	\$ Amount FY 16 \$ Amount FY 17 \$ Amount FY 18
	Objective 5	5.1: Restore impacted ecosystems
		5.2: Address and provide technical assistance for invasive species management before, during, and after toration projects

Objective 8.1: Secure dedicated, long-term funding for the ANSTF Strategic Plan actions Objective 8.2: Optimize use of current funding for ANS activities by engaging potential resources and programs within Federal agencies and additional partners Objective 8.3: Develop a list of ANS funding priorities		Educ	cation	\$ Amount FY 16		\$ Amount FY 17		\$ Amount FY 18			
Objective 6.3: Promote the use of guidance documents, best management practices and other outreach materials related to ANS Objective 6.4: Promote awareness of the ANSTF and its activities and provide educational briefings on ANS threats and solutions and to legislators and other decision makers Research S Amount FY 16 S Amount FY 17 S Amount FY 17 S Amount FY 17 S Amount FY 17 S Amount FY 18 S Amount FY 1							f the problems a	ind impacts associate	ed with		
related to ANS Objective 6.4: Promote awareness of the ANSTF and its activities and provide educational briefings on ANS threats and solutions and to legislators and other decision makers Research			Objective 6.2: Disseminate ANS outreach and technical guidance materials to target audiences								
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Objective 7.4: Support development of socio-economic research to quantify the economic impact of ANS Objective 7.5: Support research on interdiction methods for specific pathways of ANS3 Objective 7.6: Support efforts to identify gaps and expand research relevant to control and eradication measures to address ANS that have become established Objective 7.7: Encourage research to develop species invasion-risk forecast tools Objective 7.8: Support existing databases and global database networks Funding Samount FY 16 Samount FY 17 Samount FY 18 Objective 8.1: Secure dedicated, long-term funding for the ANSTF Strategic Plan actions Objective 8.2: Optimize use of current funding for ANS activities by engaging potential resources and programs within Federal agencies and additional partners Objective 8.3: Develop a list of ANS funding priorities Total Funding: Samount FY 16 Samount FY 17 Samount FY 18 Samo				Develop and maintai	n guidance d	locuments, protoco	ols, and best ma	nagement practices i	elated to		
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Objective 7.6: Support efforts to identify gaps and expand research relevant to control and eradication measures to address ANS that have become established Objective 7.7: Encourage research to develop species invasion-risk forecast tools Objective 7.8: Support existing databases and global database networks Funding \$ Amount FY 16 \$ Amount FY 17 \$ Amount FY 18 \$ Amount FY 18 \$ Objective 8.1: Secure dedicated, long-term funding for the ANSTF Strategic Plan actions Objective 8.2: Optimize use of current funding for ANS activities by engaging potential resources and programs within Federal agencies and additional partners Objective 8.3: Develop a list of ANS funding priorities Total Funding: \$ Amount FY 16 0 \$ Amount FY 17 0 \$ Amount FY 18 15,000 Additional Comments (Optional):			Objective 7.4:	Support developmen	nt of socio-ec	onomic research to	quantify the ec	onomic impact of AN	1 S		
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Objective 7.8: Support existing databases and global database networks Funding \$ Amount FY 16 \$ Amount FY 17 \$ Amount FY 18 \$ Objective 8.1: Secure dedicated, long-term funding for the ANSTF Strategic Plan actions Objective 8.2: Optimize use of current funding for ANS activities by engaging potential resources and programs within Federal agencies and additional partners Objective 8.3: Develop a list of ANS funding priorities Total Funding: \$ Amount FY 16 0 \$ Amount FY 17 0 \$ Amount FY 18 15,000 Additional Comments (Optional):											
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Objective 8.2: Optimize use of current funding for ANS activities by engaging potential resources and programs within Federal agencies and additional partners Objective 8.3: Develop a list of ANS funding priorities Total Funding: \$ Amount FY 16 0 \$ Amount FY 17 0 \$ Amount FY 18 15,000 Additional Comments (Optional):		Fund	ding	\$ Amount FY 16		\$ Amount FY 17		\$ Amount FY 18			
within Federal agencies and additional partners Objective 8.3: Develop a list of ANS funding priorities Total Funding: \$ Amount FY 16 0 \$ Amount FY 17 0 \$ Amount FY 18 15,000 Additional Comments (Optional):			Objective 8.1:	Secure dedicated, lor	ng-term fund	ing for the ANSTF	Strategic Plan ac	tions			
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Additional Comments (Optional):			Objective 8.3:	Develop a list of ANS	funding prio	rities					
	Tota	al Fui	nding:	\$ Amount FY 16 0		\$ Amount FY 17	0	\$ Amount FY 18 15,0)00		
Documents and Images (Optional)	Add	dition	al Comments	(Optional):							
Documents and Images (Optional)											
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Additional Projects to Panant?		- تماليل	amal Businets	to Donost?							
Additional Projects to Report? • Yes Please continue by entering information for the next project on the following pages			•		enterina in	formation for the	next project o	n the following pac	ies		

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Activity Title:	Small Grant Project: First International Snakehead Symposium	

Activity Description: Goals, activities, implementation steps, outcomes, and linkage to ANSTF Strategic Plan:

Snakeheads, particularly Northern Snakehead, Channa argus, have experienced dramatic range expansions in North America over the past two decades. Commensurate with this expansion has come publicity via a plethora of popular media outlets and a handful of peer-reviewed journal articles resulting from research by various state, federal, and academic institutions. This controversial group of fish has captivated audiences around the globe, but a great deal of misinformation remains in the public domain due to misconceptions and limited conveyance of legitimate biological and ecological information from the scientific community. Additionally, as C. argus continues to spread along the mid-Atlantic and central United States, resource managers from newly colonized and neighboring states desire information to inform expectations and guide implementation of management strategies.

Despite some progress in describing certain aspects of snakehead biology and, to a lesser extent, ecology, the list of unknowns remains great. Snakeheads are often implicated as a vector of ecosystem destruction and/or restructuring, yet nearly no conclusive evidence of such exists. Furthermore, various facets of spawning behavior, early life history, and recruitment are poorly understood at best. There is a paucity of studies describing interactions between snakeheads and other species, and their ecosystem effects are thus largely unknown.

The goal of the symposium is to foster a better understanding of and improve management knowledge of these species. To achieve this goal, we have several objectives which include: the symposium in May 2018 providing a germane, valuable program relevant to a broad audience; a registration that is economically reasonable; and a published book of peer-reviewed proceedings serving as a resource on current snakehead information. Presenters will be encouraged, but not be required, to publish within this volume. Additional chapters on topics not presented at the symposium are possible.

This Activity supports Objectives 1.3, 1.4, and 4.1 of the ANSTF Strategic Plan by enhancing effectiveness and implementation of the ANSTF-approved State ANS Management Plans. By facilitating interagency and international/interstate exchange of information, it also addresses Objectives 3.2, 4.2, 6.1, 6.2, 6.3, 6.4, 7.2, 7.6, and 7.8.

Stat	tus:	Ongoing					
Start Date:		1 October 2017					
End	Date, if applicable:	31 July 2019	222				
Lea	d Organization:	Virginia Chapter American Fishe	eries Society / VA Dept Game	e and Inland Fisheries / J	ohn Odenkirk		
Pari	tner Organization(s):	Mississippi River Basin Panel on Aquatic Invasive Species / Greg Conover; USGS / Duane Chapman;					
	į						
Fun	ding Amount and S		\$ Amount - FY 16	\$ Amount - FY 17	\$ Amount - FY 18		
		Source(s)	\$Alliount-F110	\$ Amount-F1 17	\$ Amount-PY 18		
\boxtimes	Federal Agend	USFWS (via MAPAIS)	0	0	7,500		
	State Governmer	nt					
	Local Governmen	nt					
	Tribal Governmer	nt					
	Academic Institution	n		-			
	NG	0					
	Othe	er					
		Total Funding for Acti	vity o	0	7 500		

\boxtimes	Coo	rdination	\$ Amount FY 16 0	\$ Amount FY 17	0	\$ Amount FY 18 0		
		Objective 1.1: S	trengthen the coordination cap	acity of the ANSTF				
		Objective 1.2: Evaluate the ability of statutory authorities, regulations, and programs necessary to implement ANSTF goals and objectives						
	•	Objective 1.3: F	acilitate the development and c	ontinued effective	ness of State an	d interstate ANS management		
	•	•	Coordinate the development and plans and pathway management	-	of ANSTF- appro	ved species control and		
		Objective 1.5: 0	Cooperate with nations that have ect, and control ANS		ers and shared p	pathways with the United States		
	Prev	ention	\$ Amount FY 16	\$ Amount FY 17		\$ Amount FY 18		
		Objective 2.1: Tappropriate me	ake steps to interdict specific pa easures	thways by develor	oing and implen	nenting guidance and		
		_	acilitate use of science-based ris			dures to assess and prioritize		
		Objective 2.3: E	xpand training and use of the H d by natural resource managers			Point (HACCP) program into		
\boxtimes	ERDI	RR	\$ Amount FY 16 0	\$ Amount FY 17	0	\$ Amount FY 18 0		
		Objective 3.1: F	acilitate surveys and monitoring	to detect ANS				
		Objective 3.2: N	Make taxonomic and ecological i	nformation and ex	pertise readily a	vailable		
		Objective 3.3: l	ncrease public and industry invo	lvement in early d	etection and rap	oid response programs		
		Objective 3.4: F	acilitate development of rapid r	esponse continger	ncy plans			
		Objective 3.5: E	Build capacity to respond rapidly	to invasions				
\boxtimes	Conf	trol	\$ Amount FY 16 0	\$ Amount FY 17	0	\$ Amount FY 18 0		
	•	Objective 4.1: S	upport and evaluate ANSTF-app	proved control and	management p	lans		
		Objective 4.2: l	ncrease invasive species training	for natural resour	ce managers an	d leverage participation		
		Objective 4.3: E or eradication	valuate the benefits and risks as	sociated with the o	commercial harv	vest of ANS as a means of control		
		Objective 4.4: E	ncourage an Integrated Pest Ma	nagement (IPM) ap	oproach to man	age existing ANS populations.		
	Rest	toration	\$ Amount FY 16	\$ Amount FY 17		\$ Amount FY 18		
		Objective 5.1: F	Restore impacted ecosystems					
		Objective 5.2: A habitat restora	•	sistance for invasiv	e species mana	gement before, during, and after		

\boxtimes	Edu	cation	\$ Amount FY 16 0	\$ Amount FY 17	0	\$ Amount FY 18 7,500			
	•		Increase understanding among to that can be taken to prevent a		of the problems a	and impacts associated with			
		Objective 6.2:	Objective 6.2: Disseminate ANS outreach and technical guidance materials to target audiences						
	•	Objective 6.3: related to ANS	Promote the use of guidance doc	tuments, best mana	agement practic	es and other outreach materials			
			Promote awareness of the ANSTF and to legislators and other decis		nd provide educ	ational briefings on ANS threats			
\boxtimes	Rese	earch	\$ Amount FY 16 0	\$ Amount FY 17	0	\$ Amount FY 17 0			
	•	community	Develop and maintain a list of AN Develop and maintain guidance of						
		Objective 7.3:	Track the progress of research act	tivities funded or p	rioritized by the	ANSTF			
		Objective 7.4:	Support development of socio-ed	conomic research to	o quantify the ed	conomic impact of ANS			
		Objective 7.5:	Support research on interdiction	methods for specif	ic pathways of A	NS3			
			Support efforts to identify gaps as S that have become established	nd expand researcl	h relevant to cor	ntrol and eradication measures			
		Objective 7.7:	Encourage research to develop sp	oecies invasion-risk	forecast tools				
	•	Objective 7.8:	Support existing databases and g	lobal database net	works				
	Fund	ding	\$ Amount FY 16	\$ Amount FY 17		\$ Amount FY 18			
		Objective 8.1:	Secure dedicated, long-term func	ling for the ANSTF	Strategic Plan ad	ctions			
			Optimize use of current funding f agencies and additional partners		y engaging pote	ntial resources and programs			
		Objective 8.3:	Develop a list of ANS funding pric	orities					
Tota	al Fui	nding:	\$ Amount FY 16 0	\$ Amount FY 17	0	\$ Amount FY 18 7,500			
Add	dition	al Comments	(Optional):						
				•					
Do	cume	nts and Image	es (Optional)						
A	dditio	onal Projects	to Report?						

Please continue by entering information for the next project on the following pages

Yes

No

C

Activity Title:	Small Grant Project: Mid Atlantic Lake Forum-A regional approach to AIS control and management	
•	· · · · · · · · · · · · · · · · · · ·	

Activity Description: Goals, activities, implementation steps, outcomes, and linkage to ANSTF Strategic Plan:

Despite the fact that lake and reservoir managers in the Mid-Atlantic face many AIS challenges, there is currently very limited cooperation and coordination between managers within and between states as to how to identify and react to these issues. The Maryland Department of Natural Resources (DNR) through this project will plan and conduct an interstate Mid-Atlantic Lake Forum focusing on AIS issues and management. This forum will bring together professionals from Maryland and surrounding states to discuss aquatic invasive species, encourage information exchange regarding distribution and control of AIS species currently found within the region, and facilitate multi-jurisdictional cooperation in controlling the spread of aquatic invasive species across state lines. Lake managers and AIS experts will discuss AIS issues within each state, identify red alert species of concern, and work on solutions to minimize the spread of those species. Presentations will focus on control methods used in each state, innovations for minimizing introductions, and herbicide use; and will include a roundtable discussion that may facilitate development of a regional action plan. This regional plan would be used to enhance information sharing among agencies, encourage all agencies to report their documented occurrences of invasive species, and facilitate development of a regional interactive map that can track the spread of invasive species (as currently being pursued between MAPAIS and USGS).

This Activity supports Objectives 1.3, 3.2, 3.3, and 3.4 of the ANSTF Strategic Plan by facilitating coordination among MAPAIS agencies and partners regarding AIS prevention, detection, and control in lakes of the Mid-Atlantic Region. It also addresses Objectives 4.2, 6.1, 6.2, 6.3, and 6.4 by providing educational materials to the public, other target audiences, and natural resource managers regarding lake management AIS issues and best management practices.

Stat	tus:	Ongoing			
Star	rt Date:	1 October 2017			
End	Date, if applicable:	31 July 2018			
Lea	d Organization:	Maryland Department of Natural	Resources / Mark Lewande	owski and Mike Naylor	
Pari	tner Organization(s):	MAPAIS			
	l				
Fun	ding Amount and S	ource(s)			
	3	Source(s)	\$ Amount - FY 16	\$ Amount - FY 17	\$ Amount - FY 18
\boxtimes	Federal Agend	USFWS (via MAPAIS)	0	0	4,550
	State Governmen	nt			
	Local Governmer	nt			
	Tribal Governmer	nt			
	Academic Institutio	n			
	NG	0			
	Othe	er			
		Total Funding for Activ	vity 0	0	4,550

\boxtimes	Coc	ordination \$ Amount FY 16 0		\$ Amount FY 17	0	\$ Amount FY 18	0
		Objective 1.1: Strengthen the coordina	tion capa	acity of the ANSTF			
		Objective 1.2: Evaluate the ability of sta ANSTF goals and objectives	tutory a	uthorities, regulati	ons, and progra	ms necessary to in	nplement
	•	Objective 1.3: Facilitate the developme plans	nt and co	ontinued effective	ness of State and	d interstate ANS m	anagement
		Objective 1.4: Coordinate the development plans and pathway mana			of ANSTF- appro	ved species contro	ol and
		Objective 1.5: Cooperate with nations to prevent, detect, and control ANS			ers and shared p	athways with the	United States
	Prev	rention \$ Amount FY 16		\$ Amount FY 17		\$ Amount FY 18	
		Objective 2.1: Take steps to interdict sp appropriate measures	ecific pa	thways by develop	oing and implem	nenting guidance	and
		Objective 2.2: Facilitate use of science-lepathways for the introduction of ANS of				dures to assess an	d prioritize
		Objective 2.3: Expand training and use work conducted by natural resource ma	of the Ha			Point (HACCP) pro	gram into
\boxtimes	ERD	RR \$ Amount FY 16 0		\$ Amount FY 17	0	\$ Amount FY 18	0
		Objective 3.1: Facilitate surveys and mo	nitoring	to detect ANS			
		Objective 3.2: Make taxonomic and eco	logical ir	nformation and ex	pertise readily a	vailable	
		Objective 3.3: Increase public and indus	try invo	vement in early de	etection and rap	id response progr	ams
		Objective 3.4: Facilitate development o	f rapid re	esponse contingen	cy plans		
		Objective 3.5: Build capacity to respond	rapidly	to invasions			
\boxtimes	Conf	trol \$ Amount FY 16 0		\$ Amount FY 17	0	\$ Amount FY 18	0
		Objective 4.1: Support and evaluate AN	STF-app	roved control and	management p	lans	
		Objective 4.2: Increase invasive species	training	for natural resourc	e managers and	l leverage particip	ation
		Objective 4.3: Evaluate the benefits and or eradication	risks ass	sociated with the c	commercial harv	est of ANS as a me	ans of control
		Objective 4.4: Encourage an Integrated	Pest Mai	nagement (IPM) ap	proach to mana	ige existing ANS p	opulations.
	Rest	toration \$ Amount FY 16		\$ Amount FY 17		\$ Amount FY 18	
		Objective 5.1: Restore impacted ecosys	tems				
		Objective 5.2: Address and provide tech habitat restoration projects	inical ass	sistance for invasiv	e species manag	gement before, du	ring, and after

⊠ Edu		cation	\$ Amount FY 16 0	\$ Amount FY 17	0	\$ Amount FY 18 4,550	
		Objective 6.1: Increase understanding among the general public of the problems and impacts associated with ANS and actions that can be taken to prevent and control ANS					
Objective 6.2: Disseminate ANS outreach and technical guidance materials to target audiences Objective 6.3: Promote the use of guidance documents, best management practices and other or related to ANS Objective 6.4: Promote awareness of the ANSTF and its activities and provide educational briefin						et audiences	
		•	and to legislators and other decis		ina provide eda	ational briefings on ANS timeats	
	Rese	earch	\$ Amount FY 16	\$ Amount FY 17		\$ Amount FY 17	
Objective 7.1: Develop and maintain a list of ANS research priorities; comm community Objective 7.2: Develop and maintain guidance documents, protocols, and the ANS							
	Objective 7.3: Track the progress of research activities funded or prioritized by the ANSTF						
		Objective 7.4: Support development of socio-economic research to quantify the economic impact of ANS					
		Objective 7.5: Support research on interdiction methods for specific pathways of ANS3					
Objective 7.6: Support efforts to identify gaps and expand research relevant to control and to address ANS that have become established					ntrol and eradication measures		
		Objective 7.7: Encourage research to develop species invasion-risk forecast tools					
		Objective 7.8: Support existing databases and global database networks					
	Fund	ding	\$ Amount FY 16	\$ Amount FY 17		\$ Amount FY 18	
		Objective 8.1:	Secure dedicated, long-term fund	ling for the ANSTF	Strategic Plan a	ctions	
Objective 8.2: Optimize use of current funding for within Federal agencies and additional partners					y engaging pote	ential resources and programs	
		Objective 8.3: Develop a list of ANS funding priorities					
Tota	al Fu	nding:	\$ Amount FY 16 0	\$ Amount FY 17	0	\$ Amount FY 18 4,550	
Additional Comments (Optional):							
Documents and Images (Ontional)							
Documents and Images (Optional)							
Additional Projects to Report?							
C Yes							
(No Please save a copy of this form for you records before submitting.						