

Delaware Estuary Aquatic Nuisance Species of Concern

Summary of ANS E-mail Survey, Summer 2002

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This is a compilation of responses to an e-mail survey of resource managers working in the Pennsylvania portion of the Delaware Estuary. Of the 64 individuals polled, 16 replied (25% response rate). A sample questionnaire is attached.

The 5 plant and animal species of highest concern to respondents were:

Phragmites

zebra mussels

purple loosestrife

resident Canada goose

Hydrilla

nutria

Eurasian watermilfoil

grass carp

Japanese knotweed

flathead catfish

Types of Respondents
College or University - 3
Philadelphia Government - 2
Private Land Conservancy - 1
Federal Government - 1
Interstate Commission - 2
Private Water Company - 1
Pennsylvania Agency - 5
Watershed Association - 1



August 12, 2002

Dear friend of the Delaware estuary,

Aquatic nuisance species (ANS) pose a growing threat to native biodiversity and recreational opportunities in the Delaware Estuary. The loss of wetlands to invasive plants and predation on game fish by non-native fish are only a few examples of the ecological harm ANS can cause.

The purpose of this five question survey is to find out which ANS concern you most, and how your organization is involved in ANS prevention and control in the Delaware Estuary. The information you provide will help Pennsylvania Sea Grant and Pennsylvania Coastal Zone Management Program increase public awareness and prioritize research and management needs throughout the region.

We hope you'll take a few minutes to respond. After all the responses are received, we'll provide you with a summary of the survey results. Please return completed surveys by August 20th, 2002 by e-mail to afaulds@psu.edu, or mail to:

Ann Faulds
Pennsylvania Sea Grant
4601 Market Street, 2nd Floor
Philadelphia, PA 19139-4616

Please feel free to call with any questions.
Sincerely,

Ann Faulds
Pennsylvania Sea Grant
(215) 471-2216

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Delaware Estuary Aquatic Nuisance Species Survey

Name _____
 Organization _____
 Address _____

 E-mail _____

1a) Please place an "X" beside the aquatic animal species that represent a potential ecological and economic threat to the aquatic communities of the Delaware Estuary.

	<u>Animal Species</u>	<u>Scientific Name</u>
<input type="checkbox"/>	Resident Canada Goose	<i>Branta canadensis</i>
<input type="checkbox"/>	Spiny Water Flea	<i>Bythotrephes spp.</i>
<input type="checkbox"/>	Northern Snakehead	<i>Channa argus</i>
<input type="checkbox"/>	Goldfish	<i>Carassius auratus</i>
<input type="checkbox"/>	European Green Crab	<i>Carcinus maenas</i>
<input type="checkbox"/>	Asiatic Clam	<i>Corbicula fluminea</i>
<input type="checkbox"/>	Grass Carp	<i>Ctenopharyngodon idella</i>
<input type="checkbox"/>	Mute Swan	<i>Cygnus olor</i>
<input type="checkbox"/>	Zebra Mussel	<i>Dreissena polymorpha</i>
<input type="checkbox"/>	Japanese Shore Crab	<i>Hemigrapsus sanguineus</i>
<input type="checkbox"/>	Silver Carp	<i>Hypophthalmichthys molitrix</i>
<input type="checkbox"/>	Bighead Carp	<i>Hypophthalmichthys nobilis</i>
<input type="checkbox"/>	Black Carp	<i>Mylopharyngodon piceus</i>
<input type="checkbox"/>	Nutria	<i>Myocastor coypus</i>
<input type="checkbox"/>	Rusty Crayfish	<i>Orconectes rusticus</i>
<input type="checkbox"/>	Tilapia	<i>Oreochromis spp.</i>
<input type="checkbox"/>	Flathead Catfish	<i>Pylodictus olivarius</i>
<input type="checkbox"/>	Veined Rapa Welk	<i>Rapana venosa</i>
<input type="checkbox"/>	Other (please specify)	

From the list above, please rank the top three animal species that represent the greatest ecological and economic threats to the Delaware Estuary. (1= highest threat).

1. _____
2. _____
3. _____

1b) Please place an "X" beside the plant species that represent a potential ecological and economic threat to the aquatic communities (including wetlands) of the Delaware Estuary.

<u>Plant Species</u>	<u>Scientific Name</u>
<input type="checkbox"/>	Garlic Mustard <i>Alliaria petiolata</i>
<input type="checkbox"/>	Fanwort <i>Cabomba caroliniana</i>
<input type="checkbox"/>	Japanese Hops <i>Humulus japonicus</i>
<input type="checkbox"/>	Hydrilla <i>Hydrilla verticillata</i>
<input type="checkbox"/>	Purple Loosestrife <i>Lythrum salicaria</i>
<input type="checkbox"/>	Eurasian Watermilfoil <i>Myriophyllum spicatum</i>
<input type="checkbox"/>	Reed Canary Grass <i>Phalaris arundinaceae</i>
<input type="checkbox"/>	Phragmites <i>Phragmites australis</i>
<input type="checkbox"/>	Japanese Knotweed <i>Polygonum cuspidatum</i>
<input type="checkbox"/>	Curly-leaf Pondweed <i>Potamogeton crispus</i>
<input type="checkbox"/>	Water Chestnut <i>Trapa natans</i>
<input type="checkbox"/>	Narrow-leaved Cattail <i>Typha angustifolia</i>
<input type="checkbox"/>	Hybrid Cattail <i>Typha x glauca</i>
<input type="checkbox"/>	Other (please specify)

From the list above, please rank the top three plant species that represent the greatest ecological and economic threats to the Delaware Estuary. (1= highest threat).

1. _____
2. _____
3. _____

2) Does your organization have a control or prevention program for any of the aquatic nuisance species listed above? If so, please describe the program and the approximate funding allocated in 2001. If volunteer hours were contributed to this project, please estimate the number of hours.

3) Does your organization currently have an education or outreach program concerning any of the species listed above? If so, please describe the program and the approximate funding allocated in 2001. If volunteer hours were contributed to this project, please estimate the number of hours.

4) Does your organization conduct any research to control invasive species? If so, please provide a brief summary of the research project and the funding you received in 2001 (or for the duration of the project).

5) Which of the following best describes the organization you represent?

<input type="checkbox"/>	Agency, Federal
<input type="checkbox"/>	Agency, State
<input type="checkbox"/>	Boating, Fishing, or Sportsmen's Club
<input type="checkbox"/>	College or University
<input type="checkbox"/>	Conservation Organization
<input type="checkbox"/>	Environmental Consultant
<input type="checkbox"/>	Fisheries Management
<input type="checkbox"/>	Private Industry
<input type="checkbox"/>	Public Utility
<input type="checkbox"/>	Watershed Organization
<input type="checkbox"/>	Other (please specify)

Thank you for participating in this survey! Please return completed surveys ASAP by e-mail to afaulds@psu.edu, or mail to:

Ann Faulds
Pennsylvania Sea Grant
4601 Market St, 2nd Floor
Philadelphia, PA 19139-4616

ANS Survey Summary Questions 1A & 1B

Overall Concern Ranking (Question 1A)		Concern Ranking by Plant and Animal (1A)		3 Highest Concern Weighted Rank (Question 1B) 1st = 3, 2nd = 2, 3rd = 1 values)		Combined Rank (1A + 1B)	
Purple Loosestrife	13	Purple Loosestrife	13	Phragmites	24	Phragmites	36
Phragmites	12	Phragmites	12	Purple Loosestrife	18	Purple Loosestrife	31
Japanese Knotweed	9	Japanese Knotweed	9	Japanese Knotweed	10	Japanese Knotweed	19
Flathead Catfish	8	Eurasian Watermilfoil	7	Eurasian Watermilfoil	5	Eurasian Watermilfoil	12
Eurasian Watermilfoil	7	Garlic Mustard	6	Hydrilla	3	Hydrilla	9
Zebra Mussel	7	Hydrilla	6	Garlic Mustard	2	Garlic Mustard	8
Garlic Mustard	6	Curly Pondweed	4	Water Chestnut	2	Water Chestnut	6
Hydrilla	6	Water Chestnut	4	Hybrid Cattail	1	Curly Pondweed	4
Grass Carp	5	Reed Canary Grass	3	Chinese lobilia, L. Chinesnsis		Reed Canary Grass	3
Resident Canada Goose	5	Japanese Hops	2	Curly Pondweed		Hybrid Cattail	2
Asiatic Clam	4	Chinese lobilia, L. Chinesnsis	1	Fanwort		Japanese Hops	2
Curly Pondweed	4	Hybrid Cattail	1	Japanese Hops		Chinese lobilia, L. Chinesnsis	1
Rusty Crayfish	4	Fanwort		Narrow-leaved Cattail		Fanwort	
Water Chestnut	4	Narrow-leaved Cattail		Reed Canary Grass		Narrow-leaved Cattail	
Northern Snakehead	3	Flathead Catfish	8	Zebra Mussel	14	Zebra Mussel	21
Nutria	3	Zebra Mussel	7	Resident Canada Goose	9	Resident Canada Goose	14
Reed Canary Grass	3	Grass Carp	5	Flathead Catfish	4	Flathead Catfish	12
Bighead Carp	2	Resident Canada Goose	5	Grass Carp	4	Grass Carp	9
Black Carp	2	Asiatic Clam	4	Nutria	4	Nutria	7
Goldfish	2	Rusty Crayfish	4	Mute Swan	2	Rusty Crayfish	6
Japanese Hops	2	Northern Snakehead	3	Northern Snakehead	2	Northern Snakehead	5
Silver Carp	2	Nutria	3	Rusty Crayfish	2	Asiatic Clam	5
Chinese lobilia, L. Chinesnsis	1	Bighead Carp	2	Veined Rapa Welk	2	Mute Swan	3
European Green Crab	1	Black Carp	2	Asiatic Clam	1	Veined Rapa Welk	3
Hybrid Cattail	1	Goldfish	2	Silver Carp	1	Silver Carp	3
Mute Swan	1	Silver Carp	2	Bighead Carp		Goldfish	2
Released Pet Duck	1	European Green Crab	1	Black Carp		Bighead Carp	2
Spiny Water Flea	1	Mute Swan	1	European Green Crab		Black Carp	2
Veined Rapa Welk	1	Released Pet Duck	1	Goldfish		European Green Crab	1
Fanwort		Spiny Water Flea	1	Japanese Shore Crab		Released Pet Duck	1
Japanese Shore Crab		Veined Rapa Welk	1	Released Pet Duck		Spiny Water Flea	1
Narrow-leaved Cattail		Japanese Shore Crab		Spiny Water Flea		Japanese Shore Crab	
Tilapia		Tilapia		Tilapia		Tilapia	