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H. R. 1081

To establish marine and freshwater research, development, and demonstration programs to support efforts to prevent, control, and eradicate invasive species, as well as to educate citizens and stakeholders and restore ecosystems.

IN THE HOUSE OF REPRESENTATIVES

MARCH 5, 2003

Mr. EHLERS (for himself, Mr. GILCHREST, Mr. BAIRD, Mr. HOEKSTRA, Mr. ORTIZ, Mrs. BIGGERT, Mr. KIRK, Mr. KILDEE, Mr. CAMP, Mr. MCHUGH, Mr. EMANUEL, Ms. SLAUGHTER, Mr. ROGERS of Michigan, Mr. ENGLISH, Mr. FARR, Mr. CUMMINGS, Mr. LEVIN, Mr. STUPAK, Mr. SCOTT of Virginia, Mr. ABERCROMBIE, Mr. QUINN, Mr. SMITH of Washington, Mr. GEORGE MILLER of California, Mrs. MALONEY, Mr. DINGELL, Ms. KAPTUR, Ms. LEE, Mr. SAXTON, Mr. DICKS, Ms. BORDALLO, Mr. VISCLOSKY, Mr. WALSH, Mr. UPTON, Mr. GILLMOR, Mr. SMITH of Michigan, Mr. CASE, Mr. BOEHLERT, Mr. BROWN of Ohio, Mr. GREENWOOD, Mr. PALLONE, Mr. MARKEY, Mr. DELAHUNT, Mr. CARDIN, Mr. ALLEN, Mrs. MILLER of Michigan, Mr. BLUMENAUER, Mr. INSLEE, Mr. HOUGHTON, Ms. MCCOLLUM, Mr. MCGOVERN, Mr. MCCOTTER, Ms. BALDWIN, Mr. LEACH, Mr. MCDERMOTT, Mr. NEAL of Massachusetts, Mr. KNOLLENBERG, Mr. TOWNS, Mr. HONDA, Mr. LIPINSKI, Mr. WEINER, Mr. KIND, Mr. EVANS, Ms. LOFGREN, Mr. JOHNSON of Illinois, Mr. KLECZKA, Mr. SIMMONS, Mr. FALEOMAVAEGA, and Mr. LATOURETTE) introduced the following bill; which was referred to the Committee on Science, and in addition to the Committees on Transportation and Infrastructure, Resources, and House Administration, for a period to be subsequently determined by the Speaker, in each case for consideration of such provisions as fall within the jurisdiction of the committee concerned

A BILL

To establish marine and freshwater research, development,

and demonstration programs to support efforts to prevent, control, and eradicate invasive species, as well as to educate citizens and stakeholders and restore ecosystems.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

3 **SECTION 1. SHORT TITLE.**

4 This Act may be cited as the “Aquatic Invasive Spe-

5 cies Research Act”.

6 **SEC. 2. FINDINGS.**

7 The Congress makes the following findings:

8 (1) Aquatic invasive species damage infrastruc-

9 ture, disrupt commerce, outcompete native species,

10 reduce biodiversity, and threaten human health.

11 (2) The direct and indirect costs of aquatic

12 invasive species to our Nation’s economy number in

13 the billions of dollars per year. In the Great Lakes

14 region, approximately \$3,000,000,000 dollars have

15 been spent in the past 10 years to mitigate the dam-

16 age caused by one invasive species, the zebra mussel.

17 (3) Recent studies have shown that, in addition

18 to economic damage, invasive species cause enor-

19 mous environmental damage, and have cited invasive

20 species as the second leading threat to endangered

21 species.

1 (4) Over the past 200 years, the rate of de-
2 tected marine and freshwater invasions in North
3 America has increased exponentially.

4 (5) The rate of invasions continues to grow
5 each year.

6 (6) Marine and freshwater research underlies
7 every aspect of detecting, preventing, controlling,
8 and eradicating invasive species, educating citizens
9 and stakeholders, and restoring ecosystems.

10 (7) Current Federal efforts, including research
11 efforts, have focused primarily on controlling estab-
12 lished invasive species, which is both costly and often
13 unsuccessful. An emphasis on research, development,
14 and demonstration to support efforts to prevent
15 invasive species or eradicate them upon entry into
16 United States waters would likely result in a more
17 cost-effective and successful approach to combating
18 invasive species through preventing initial introduc-
19 tion.

20 (8) Research, development, and demonstration
21 to support prevention and eradication includes moni-
22 toring of both pathways and ecosystems to track the
23 introduction and establishment of nonnative species,
24 and development and testing of technologies to pre-
25 vent introduction through known pathways.

1 (9) Therefore, Congress finds that it is in the
2 United States interest to conduct a comprehensive
3 and thorough research, development, and demonstra-
4 tion program on aquatic invasive species in order to
5 better understand how aquatic invasive species are
6 introduced and become established and to support
7 efforts to prevent the introduction and establishment
8 of, and to eradicate, these species.

9 **SEC. 3. DEFINITIONS.**

10 In this Act:

11 (1) **ADMINISTERING AGENCIES.**—The term “ad-
12 ministering agencies” means—

13 (A) the National Oceanic and Atmospheric
14 Administration (including the Great Lakes En-
15 vironmental Research Laboratory);

16 (B) the Smithsonian Environmental Re-
17 search Center; and

18 (C) the United States Geological Survey.

19 (2) **AQUATIC ECOSYSTEM.**—The term “aquatic
20 ecosystem” means a freshwater, marine, or estuarine
21 environment (including inland waters and wetlands)
22 located in the United States.

23 (3) **BALLAST WATER.**—The term “ballast
24 water” means any water (with its suspended matter)
25 used to maintain the trim and stability of a vessel.

1 (4) INVASION.—The term “invasion” means the
2 introduction and establishment of an invasive species
3 into an ecosystem beyond its historic range.

4 (5) INVASIVE SPECIES.—The term “invasive
5 species” means a species—

6 (A) that is nonnative to the ecosystem
7 under consideration; and

8 (B) whose introduction causes or may
9 cause harm to the economy, the environment, or
10 human health.

11 (6) INVASIVE SPECIES COUNCIL.—The term
12 “Invasive Species Council” means the council estab-
13 lished by section 3 of Executive Order No. 13112
14 (42 U.S.C. 4321 note).

15 (7) PATHWAY.—The term “pathway” means 1
16 or more routes by which an invasive species is trans-
17 ferred from one ecosystem to another.

18 (8) SPECIES.—The term “species” means any
19 fundamental category of taxonomic classification or
20 any viable biological material ranking below a genus
21 or subgenus.

22 (9) TASK FORCE.—The term “Task Force”
23 means the Aquatic Nuisance Species Task Force es-
24 tablished by section 1201(a) of the Nonindigenous

1 Aquatic Nuisance Prevention and Control Act of
2 1990 (16 U.S.C. 4721(a)).

3 (10) TYPE APPROVAL.—The term “type ap-
4 proval” means an approval procedure under which a
5 type of system is certified as meeting a standard es-
6 tablished pursuant to Federal law for a particular
7 application.

8 **SEC. 4. CONSULTATION AND COOPERATION.**

9 (a) MEMORANDUM OF UNDERSTANDING.—The ad-
10 ministering agencies shall enter into a memorandum of
11 understanding regarding implementation of this Act.

12 (b) CONSULTATION.—In carrying out this Act, the
13 administering agencies shall consult with—

14 (1) the Task Force and Invasive Species Coun-
15 cil;

16 (2) the Environmental Protection Agency; and

17 (3) other appropriate Federal and State agen-
18 cies.

19 (c) COOPERATION.—In carrying out this Act, the ad-
20 ministering agencies shall contract, as appropriate, or oth-
21 erwise cooperate with academic researchers.

22 **SEC. 5. ECOLOGICAL AND PATHWAY RESEARCH.**

23 (a) IN GENERAL.—The administering agencies shall
24 develop and conduct a marine and fresh-water research
25 program which shall include ecological and pathway sur-

1 veys and experimentation to detect nonnative aquatic spe-
2 cies in aquatic ecosystems and to assess rates and patterns
3 of introductions of nonnative aquatic species in aquatic
4 ecosystems. The goal of this marine and freshwater re-
5 search program shall be to support efforts to prevent the
6 introduction of, detect, and eradicate invasive species
7 through informing early detection and rapid response ef-
8 forts, informing relevant policy decisions, and assessing
9 the effectiveness of implemented policies to prevent the in-
10 troduction and spread of aquatic invasive species. Surveys
11 and experiments under this subsection shall be commenced
12 not later than 18 months after the date of the enactment
13 of this Act.

14 (b) **PROTOCOL DEVELOPMENT.**—The administering
15 agencies shall establish standardized protocols for con-
16 ducting ecological and pathway surveys of nonnative
17 aquatic species that are integrated and produce com-
18 parable data, and shall recommend a standardized ap-
19 proach for classifying species. For ecological surveys, two
20 protocols shall be developed, one to support early detection
21 surveys that may be conducted by Federal, State, or local
22 agencies involved in the management of invasive species,
23 and a second protocol to support the surveys conducted
24 under subsection (a). Protocols shall, as practicable, be in-
25 tegrated with existing protocols and data collection meth-

1 ods. Upon the development of protocols to support early
2 detection surveys, the Task Force shall make appropriate
3 efforts to disseminate the protocols to appropriate Fed-
4 eral, State, and local entities. In developing the protocols
5 under this subsection, the administering agencies shall
6 draw on the recommendations gathered at the workshop
7 under subsection (g). The protocols shall be peer reviewed,
8 and revised as necessary. Protocols shall be completed
9 within 1 year after the date of the enactment of this Act.

10 (c) ECOLOGICAL AND PATHWAY SURVEY REQUIRE-
11 MENTS.—(1) Each ecological survey conducted under sub-
12 section (a) shall, at a minimum—

13 (A) document baseline ecological information of
14 the aquatic ecosystem including, to the extent prac-
15 ticable, a comprehensive inventory of native species,
16 nonnative species, and species of unknown origin
17 present in the ecosystem, as well as the chemical
18 and physical characteristics of the water and under-
19 lying substrate;

20 (B) for nonnative species, gather information to
21 assist in identifying their life history, environmental
22 requirements and tolerances, the historic range of
23 their native ecosystems, and their history of spread-
24 ing from their native ecosystems;

1 (C) track the establishment of nonnative species
2 including information about the estimated popu-
3 lation of nonnative organisms in order to allow an
4 analysis of the probable date of introduction of the
5 species; and

6 (D) identify the likely pathway of entry of non-
7 native species.

8 (2) Each pathway survey conducted under this sec-
9 tion shall, at a minimum—

10 (A) identify what nonnative aquatic species are
11 being introduced or may be introduced through the
12 pathways under consideration;

13 (B) determine the quantities of organisms being
14 introduced through the pathways under consider-
15 ation; and

16 (C) determine the practices that contributed to
17 or could contribute to the introduction of nonnative
18 aquatic species through the pathway under consider-
19 ation.

20 (d) NUMBER AND LOCATION OF SURVEY SITES.—

21 The administering agencies shall designate the number
22 and location of survey sites necessary to carry out marine
23 and freshwater research required under this section. In
24 establishing sites under this subsection or subsection (e),
25 emphasis shall be on the geographic diversity of sites, as

1 well as the diversity of the human uses and biological char-
2 acteristics of sites.

3 (e) COMPETITIVE GRANT PROGRAM.—The admin-
4 istering agencies (acting through the National Oceanic
5 and Atmospheric Administration) shall administer a pro-
6 gram to award grants to academic institutions, State
7 agencies, and other appropriate groups, in order to assist
8 in carrying out subsections (b) and (h). This program
9 shall be competitive, peer-reviewed, and merit-based.

10 (f) SHIP PATHWAY SURVEYS.—Section
11 1102(b)(2)(B)(ii) of the Nonindigenous Aquatic Nuisance
12 Prevention and Control Act of 1990 (16 U.S.C.
13 4712(b)(2)(B)(ii)) is amended to read as follows:

14 “(ii) examine other potential modes
15 for the introduction of nonnative aquatic
16 species by ship, including hull fouling.”.

17 (g) WORKSHOP.—In order to support the develop-
18 ment of the protocols and design for the surveys under
19 subsections (b) and (c), the administering agencies shall
20 convene a workshop with appropriate researchers from
21 Federal and State agencies and academic institutions to
22 gather recommendations. The administering agencies shall
23 make the results of the workshop widely available to the
24 public. The workshop shall be held within 120 days after
25 the date of the enactment of this Act.

1 (h) EXPERIMENTATION.—The administering agen-
2 cies shall conduct laboratory and field-based marine and
3 freshwater research experiments on a range of taxonomic
4 groups to identify the relationship between the introduc-
5 tion and establishment of nonnative aquatic species, in-
6 cluding those legally introduced, and the circumstances
7 necessary for those species to survive and thrive.

8 (i) NATIONAL PATHWAY AND ECOLOGICAL SURVEYS
9 DATABASE.—

10 (1) IN GENERAL.—The United States Geologi-
11 cal Survey shall develop, maintain, and update, in
12 consultation and cooperation with the Smithsonian
13 Environmental Research Center, the National Oce-
14 anic and Atmospheric Administration, and the Task
15 Force, a central, national database of information
16 concerning information collected under this section.

17 (2) REQUIREMENTS.—The database shall—

18 (A) be widely available to the public;

19 (B) be updated not less than once a quar-
20 ter;

21 (C) be coordinated with existing databases
22 collecting similar information; and

23 (D) be, to the maximum extent practicable,
24 formatted such that the data is useful for both

1 researchers and Federal and State employees
2 managing relevant invasive species programs.

3 **SEC. 6. ANALYSIS.**

4 (a) INVASION ANALYSIS.—

5 (1) IN GENERAL.—Not later than 3 years after
6 the date of the enactment of this Act, and every year
7 thereafter, the administering agencies shall analyze
8 data collected under section 5 and other relevant re-
9 search on the rates and patterns of invasions by
10 aquatic invasive species in waters of the United
11 States. The purpose of this analysis shall be to use
12 the data collected under section 5 and other relevant
13 research to support efforts to prevent the introduc-
14 tion of, detect, and eradicate invasive species
15 through informing early detection and rapid re-
16 sponse efforts, informing relevant policy decisions,
17 and assessing the effectiveness of implemented poli-
18 cies to prevent the introduction and spread of
19 invasive species.

20 (2) CONTENTS.—The analysis required under
21 paragraph (1) shall include with respect to aquatic
22 invasive species—

23 (A) an analysis of pathways, including—

1 (i) identifying, and characterizing as
2 high, medium, or low risk, pathways re-
3 gionally and nationally;

4 (ii) identifying new and expanding
5 pathways;

6 (iii) identifying handling practices
7 that contribute to the introduction of spe-
8 cies in pathways; and

9 (iv) assessing the risk that species le-
10 gally introduced into the United States
11 pose for introduction into aquatic eco-
12 systems;

13 (B) patterns and rates of invasion and sus-
14 ceptibility to invasion of various bodies of
15 water;

16 (C) how the risk of establishment through
17 a pathway is related to the identity and number
18 of organisms transported;

19 (D) rates of spread and numbers and types
20 of pathways of spread of new populations of the
21 aquatic invasive species and an estimation of
22 the potential spread and distribution of newly
23 introduced invasive species based on their envi-
24 ronmental requirements and historical distribu-
25 tion;

1 (E) documentation of factors that influ-
2 ence an ecosystem's vulnerability to a nonnative
3 aquatic species becoming invasive;

4 (F) a description of the potential for, and
5 impacts of, pathway management programs on
6 invasion rates;

7 (G) recommendations for improvements in
8 the effectiveness of pathway management;

9 (H) to the extent practical, a determina-
10 tion of the level of reduction in live organisms
11 of various taxonomic groups required to reduce
12 the risk of establishment to receiving aquatic
13 ecosystems to an acceptable level; and

14 (I) an evaluation of the effectiveness of
15 management actions (including any standard)
16 at reducing species introductions and establish-
17 ment.

18 (c) RESEARCH TO ASSESS THE POTENTIAL OF THE
19 ESTABLISHMENT OF INTRODUCED SPECIES.—Within 2
20 years after the date of the enactment of this Act, the ad-
21 ministering agencies shall develop a profile, based on the
22 general characteristics of invasive species and vulnerable
23 ecosystems, in order to predict, to the extent practical,
24 whether a species planned for importation is likely to in-
25 vade a particular aquatic ecosystem if introduced. In de-

1 veloping the profile, the above agencies shall analyze the
2 research conducted under section 5, and other research
3 as necessary, to determine general species and ecosystem
4 characteristics (taking into account the opportunity for in-
5 troduction into any ecosystem) and circumstances that can
6 lead to establishment. Based on the profile, the Task
7 Force shall make recommendations to the Invasive Species
8 Council as to what planned importations of nonnative
9 aquatic organisms should be restricted. This profile shall
10 be peer-reviewed.

11 (d) AUTHORIZATION OF APPROPRIATIONS.—There
12 are authorized to be appropriated for carrying out this sec-
13 tion and section 5 of this Act, and section 1102(b)(2) of
14 the Nonindigenous Aquatic Nuisance Prevention and Con-
15 trol Act of 1990 (16 U.S.C. 4712(b)(2)) for each of the
16 fiscal years 2004 through 2008—

17 (1) \$4,000,000 for the Smithsonian Environ-
18 mental Research Center;

19 (2) \$4,500,000 for the United States Geological
20 Survey, of which \$500,000 shall be for developing,
21 maintaining, and updating the database under sec-
22 tion 5(i); and

23 (3) \$17,000,000 for the National Oceanic and
24 Atmospheric Administration, of which \$13,000,000
25 shall be for the grant program under section 5(e).

1 **SEC. 7. DISSEMINATION.**

2 (a) IN GENERAL.—The Invasive Species Council, in
3 coordination with the Task Force and the administering
4 agencies, shall be responsible for disseminating the infor-
5 mation collected under this Act to Federal, State, and
6 local entities, including relevant policymakers, and private
7 researchers with responsibility over or interest in aquatic
8 invasive species.

9 (b) REPORT TO CONGRESS.—Not later than 3 years
10 after the date of the enactment of this Act, the Invasive
11 Species Council shall report actions and findings under
12 section 6 to the Congress, and shall update this report
13 once every 3 years thereafter, or more often as necessary.

14 (c) RESPONSE STRATEGY.—The Invasive Species
15 Council, in coordination with the Task Force, the admin-
16 istering agencies, and other appropriate Federal and State
17 agencies, shall develop and implement a national strategy
18 for how information collected under this Act will be shared
19 with Federal, State, and local entities with responsibility
20 for determining response to the introduction of potentially
21 harmful nonnative aquatic species, to enable those entities
22 to better and more rapidly respond to such introductions.

23 (d) PATHWAY PRACTICES.—The Invasive Species
24 Council, in coordination with the Task Force and the ad-
25 ministering agencies, shall disseminate information to,
26 and develop an ongoing educational program for, pathway

1 users (including vendors and customers) on how their
2 practices could be modified to prevent the intentional or
3 unintentional introduction of nonnative aquatic species
4 into aquatic ecosystems.

5 (e) AUTHORIZATION OF APPROPRIATIONS.—There
6 are authorized to be appropriated for each of the fiscal
7 years 2004 through 2008 \$500,000 for the Invasive Spe-
8 cies Council for carrying out this section.

9 **SEC. 8. TECHNOLOGY DEVELOPMENT, DEMONSTRATION,**
10 **AND VERIFICATION.**

11 (a) ENVIRONMENTALLY SOUND TECHNOLOGY DE-
12 VELOPMENT, DEMONSTRATION, AND VERIFICATION.—

13 (1) GRANT PROGRAM.—Not later than 1 year
14 after the date of the enactment of this Act, the En-
15 vironmental Protection Agency, acting through the
16 Office of Research and Development, in consultation
17 with the Army Corps of Engineers and the admin-
18 istering agencies, shall develop and begin admin-
19 istering a grant program to fund research, develop-
20 ment, demonstration, and verification of environ-
21 mentally sound cost-effective technologies and meth-
22 ods to control and eradicate aquatic invasive species.

23 (2) PURPOSES.—Proposals funded under this
24 subsection shall—

1 (A) seek to support Federal, State, or local
2 officials' ongoing efforts to control and eradi-
3 cate aquatic invasive species in an environ-
4 mentally sound manner;

5 (B) increase the number of environ-
6 mentally sound technologies or methods Fed-
7 eral, State, or local officials may use to control
8 or eradicate aquatic invasive species;

9 (C) provide for demonstration or dissemi-
10 nation of the technology or method to potential
11 end-users; and

12 (D) verify that any technology or method
13 meets any appropriate criteria developed for ef-
14 fectiveness and environmental soundness by the
15 Environmental Protection Agency.

16 (3) PREFERENCE.—The Administrator of the
17 Environmental Protection Agency shall give pref-
18 erence to proposals that will likely meet any appro-
19 priate criteria developed for environmental sound-
20 ness by the Environmental Protection Agency.

21 (4) MERIT REVIEW.—Grants shall be awarded
22 under this subsection through a competitive, peer-re-
23 viewed, merit-based process.

24 (5) REPORT.—Not later than 3 years after the
25 date of the enactment of this Act, the Administrator

1 of the Environmental Protection Agency shall pre-
2 pare and submit a report to Congress on the pro-
3 gram conducted under this subsection. The report
4 shall include findings and recommendations of the
5 Administrator with regard to technologies and meth-
6 ods.

7 (b) DISPERSAL BARRIER RESEARCH PROGRAM.—
8 Not later than 1 year after the date of the enactment of
9 this Act, the Assistant Secretary of the Army for the
10 Corps of Engineers, in conjunction with the Fish and
11 Wildlife Service and other appropriate Federal agencies
12 and academic researchers, shall establish a research, de-
13 velopment, and demonstration program to study environ-
14 mentally sound methods and technologies to reduce dis-
15 persal of aquatic invasive species through interbasin wa-
16 terways and assess the potential for using those methods
17 and technologies in other waterways.

18 (c) SHIP PATHWAY TECHNOLOGY DEMONSTRA-
19 TION.—

20 (1) REAUTHORIZATION OF PROGRAM.—Section
21 1301(e) of the Nonindigenous Aquatic Nuisance
22 Prevention and Control Act of 1990 (16 U.S.C.
23 4741(e)) is amended by striking “\$2,500,000” and
24 inserting “\$7,500,000 for each of the fiscal years
25 2004 through 2008”.

1 (2) EXPANSION OF PROGRAM.—Section 1104(b)
2 of the Nonindigenous Aquatic Nuisance Prevention
3 and Control Act of 1990 (16 U.S.C. 4714(b)) is
4 amended—

5 (A) by redesignating paragraphs (4) and
6 (5) as paragraphs (5) and (6), respectively; and

7 (B) by inserting after paragraph (3) the
8 following new paragraph:

9 “(4) ADDITIONAL PURPOSES.—The Secretary
10 of the Interior and the Secretary of Commerce may
11 also demonstrate and verify technologies under this
12 subsection to monitor and control pathways of orga-
13 nism transport on ships other than through ballast
14 water.”.

15 (3) CRITERIA AND WORKSHOP.—Section 1104
16 of the Nonindigenous Aquatic Nuisance Prevention
17 and Control Act of 1990 (16 U.S.C. 4714) is
18 amended by adding at the end the following new
19 subsections:

20 “(d) CRITERIA.—When issuing grants under this sec-
21 tion, the National Oceanic and Atmospheric Administra-
22 tion shall give preference to those technologies that will
23 likely meet the criteria laid out in any testing protocol de-
24 veloped by the Environmental Protection Agency Office of

1 Research and Development's Environmental Technology
2 Verification Program.

3 “(e) WORKSHOP.—The National Oceanic and Atmos-
4 pheric Administration shall hold an annual workshop of
5 principal investigators funded under this section and re-
6 searchers conducting research directly related to ship
7 pathway technology development, for information ex-
8 change, and shall make the proceedings widely available
9 to the public.”.

10 (d) AUTHORIZATION OF APPROPRIATIONS.—There
11 are authorized to be appropriated for each of the fiscal
12 years 2004 through 2008—

13 (1) \$2,500,000 for the Environmental Protec-
14 tion Agency to carry out subsection (a); and

15 (2) \$1,000,000 for the Army Corps of Engi-
16 neers to carry out subsection (b).

17 **SEC. 9. RESEARCH TO SUPPORT THE SETTING AND IMPLE-**
18 **MENTATION OF SHIP PATHWAY STANDARDS.**

19 (a) RESEARCH PROGRAM.—The Coast Guard and the
20 Environmental Protection Agency, in coordination with
21 the National Oceanic and Atmospheric Administration,
22 the Task Force, and other appropriate Federal agencies
23 and academic researchers, shall develop a coordinated re-
24 search program to support the promulgation and imple-

1 mentation of standards to prevent the introduction and
2 spread of invasive species by ships that shall include—

3 (1) characterizing physical, chemical, and bio-
4 logical harbor conditions relevant to ballast dis-
5 charge into United States waters to inform the de-
6 sign and implementation of ship vector control tech-
7 nologies and practices;

8 (2) developing testing protocols for determining
9 the effectiveness of vector monitoring and control
10 technologies and practices;

11 (3) researching and demonstrating methods for
12 mitigating the spread of invasive species by coastal
13 voyages, including exploring the effectiveness of al-
14 ternative exchange zones in the near coastal areas
15 and other methods proposed to reduce transfers of
16 organisms;

17 (4) verifying the practical effectiveness of any
18 type approval process to ensure that the process pro-
19 duces repeatable and accurate assessments of treat-
20 ment effectiveness; and

21 (5) evaluating the effectiveness and residual
22 risk and environmental impacts associated with any
23 standard set with respect to the ship pathway
24 through experimental research.

1 (b) PERFORMANCE TEST.—Within 1 year after the
2 date of the enactment of this Act, the Coast Guard, in
3 conjunction with the National Institute of Standards and
4 Technology and the Maritime Administration, shall design
5 a performance test for ballast water exchange such as a
6 dye study to measure the effectiveness of ballast water ex-
7 change.

8 (c) NATIONAL ACADEMY STUDY.—The Secretary of
9 the Department in which the Coast Guard is operating
10 shall enter into an arrangement with the National Acad-
11 emy of Sciences under which the Academy shall—

12 (1) identify the relative risk of transfer of var-
13 ious taxonomic groups by different ship modes;

14 (2) assess the extent to which a ballast water
15 standard that virtually eliminates the risk of intro-
16 duction of invasive species by ballast water may re-
17 late to the risk of introductions by all ship modes,
18 and explain the degree of uncertainty in such assess-
19 ment; and

20 (3) recommend methods for reducing organism
21 transfers by ships by addressing all parts and sys-
22 tems of ships and all related modes of transport of
23 invasive species, and identify the research, develop-
24 ment, and demonstration needed to improve the in-

1 formation base to support such methods, including
2 economic information.

3 Not later than 2 years after the date of the enactment
4 of this Act, the Secretary of the Department in which the
5 Coast Guard is operating shall transmit to the Congress
6 a report on the results of the study under this subsection.

7 (d) RECOMMENDATIONS.—Not later than the later of
8 1 year after the date of submission of the report under
9 subsection (c), or 3 years after the date of the enactment
10 of this Act, the Task Force, in conjunction with the Envi-
11 ronmental Protection Agency, the administering agencies,
12 and other appropriate Federal and State agencies and aca-
13 demic researchers, shall submit to the Coast Guard a re-
14 port that describes recommendations for—

15 (1) a ship pathway treatment standard that in-
16 corporates all potential modes of transfer by ships;
17 and

18 (2) methods for type approval and accurate
19 monitoring of treatment performance that are simple
20 and streamlined and follow established protocols.

21 (e) WORKING GROUP.—Not later than 2 years after
22 the issuance by the Coast Guard of any standard relating
23 to the introduction by ships of invasive species, the Coast
24 Guard shall convene a working group including the Envi-
25 ronmental Protection Agency, the administering agencies,

1 and other appropriate Federal and State agencies and aca-
2 demic researchers, to evaluate the effectiveness of that
3 standard and accompanying implementation protocols.
4 The duties of the working group shall, at a minimum, in-
5 clude—

6 (1) reviewing the effectiveness of the standard
7 in reducing the establishment of invasive species in
8 aquatic ecosystems, taking into consideration the
9 data collected under section 5; and

10 (2) developing recommendations to the Coast
11 Guard for the revision of such standard and type ap-
12 proval process to ensure effectiveness in reducing in-
13 troductions and accurate shipboard monitoring of
14 treatment performance that is simple and stream-
15 lined, which shall be made widely available to the
16 public.

17 (f) AUTHORIZATION OF APPROPRIATIONS.—There
18 are authorized to be appropriated—

19 (1) for each of the fiscal years 2004 through
20 2008 \$1,500,000 for the Coast Guard and
21 \$1,500,000 for Environmental Protection Agency to
22 carry out subsection (a);

23 (2) for each of the fiscal years 2004 through
24 2006 \$500,000 for the Coast Guard to carry out
25 subsection (b); and

1 (3) for fiscal year 2004 \$500,000 for the Coast
2 Guard to carry out subsection (c), to remain avail-
3 able until expended.

4 **SEC. 10. RESEARCH IN SYSTEMATICS AND TAXONOMY.**

5 (a) IN GENERAL.—The National Science Foundation
6 shall establish a program to award grants to researchers
7 at institutions of higher education and museums to carry
8 out research programs in systematics and taxonomy.

9 (b) GOALS.—The goals of the program under this
10 section are to—

11 (1) encourage scientists to pursue careers in
12 systematics and taxonomy to ensure a continuing
13 knowledge base in these disciplines;

14 (2) ensure that there will be adequate expertise
15 in systematics and taxonomy to support Federal,
16 State, and local needs to identify species;

17 (3) develop this expertise throughout the United
18 States with an emphasis on regional diversity; and

19 (4) draw on existing expertise in systematics
20 and taxonomy at institutions of higher education
21 and museums to train the next generation of system-
22 atists and taxonomists.

23 (c) CRITERIA.—Grants shall be awarded under this
24 section on a merit-reviewed competitive basis. Emphasis
25 shall be placed on funding proposals in a diverse set of

1 ecosystems and geographic locations, and, when applica-
2 ble, integrated with the United States Long Term Ecologi-
3 cal Research Network. Preference shall be given to pro-
4 posals that will include student participation, and to insti-
5 tutions and museums that actively train students to be-
6 come experts in taxonomy and systematics.

7 (d) AUTHORIZATION OF APPROPRIATIONS.—There
8 are authorized to be appropriated to the National Science
9 Foundation for carrying out this section \$2,500,000 each
10 of the fiscal years 2004 through 2008.

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