MINUTES FROM MEETING ON November 19, 1990

Hesionidae: Ron Velarde, City of San Diego hosted this month's meeting. Ron presented a key to the Hesionidae for southern California. Ron is also developing voucher sheets for Podarkeopsis sp. A and Microphthalmus sp A. Both the key to the Hesionidae and the voucher sheets will be distributed in the next edition of the newsletter.

Scaleworm Key: The scaleworm key presented at the September SCAMIT meeting has been completed and is included in this newsletter. In addition to the pictorial and verbal keys, there are voucher sheets for each provisional species listed in the key.

Another polynoid species has been added to the key since the September meeting. Two specimens of Arcteobia cf. anticostiensis were recently collected from Point Loma in 150 ft of water. If you are not careful you could mistakenly call these animals Harmothoe sp. B. The neurosetae are bifid and reminiscent of Harmothoe sp. B, however, there are two types of notosetae; capillary and stout.

FUNDS FOR THIS PUBLICATION PROVIDED IN PART BY ARCO FOUNDATION, CHEVRON USA, AND TEXACO INC. SCAMIT newsletter is not deemed to be a valid publication for formal taxonomic purposes.
The pictorial key to the scaleworms was created using the Macintosh program Superpaint. New species may be added to the key easily to make a customized key for your specific monitoring program. Anyone interested in having a copy of the computer file for the scaleworm pictorial key may send a micro floppy disk to Ross Duggan at the following address:

Ross Duggan  
Point Loma Marine Biology Laboratory  
Ocean Monitoring Program  
4077 North Harbor Drive MS 45A  
San Diego, CA 92101

SCAMIT Christmas Party: The SCAMIT Christmas party is scheduled for Saturday evening, December 8th from 6:00 pm to 9:00 pm at the Cabrillo Marine Museum. The party is potluck style. SCAMIT will provide the entree, drinks and plates/utensils. J.L. Barnard (Santa Claus) and James Thomas will attend this year's Christmas party. If you have any questions about the party, or if you would like to help, you may contact Larry Lovell at (619) 945-1608.

Barnard Amphipod Workshop: In addition to J.L. Barnard and James Thomas there will be three additional presentations. Ron Velarde, City of San Diego will discuss Orchomene and Doug Diener, Marine Ecological Consultants Inc. will discuss Hippomedon. On Monday, December 10th Jodie Martin, L.A. Co. Mus. of Natural History, will present a talk including a film on the symbionts occurring on the giant jellyfish that appeared in the southern California waters this past summer.

Spionidae Meeting: Larry Lovell has requested species lists for the Spionidae (non-Polydorid) meeting scheduled for February. Please send your species lists to Larry at the following address.

Larry Lovell  
1036 Buena Vista Drive  
Vista, CA 92083  
Telephone: (619) 945-1608

National Institute for the Environment: A proposal for the establishment of a National Institute for the Environment was received by SCAMIT and is included in the newsletter.
Zoological and Natural History Literature: If you want any literature from Donald Hahn, Natural History Books, please send him your new wish list. He is destroying the old wish lists and will be loading the new lists on a computer. He will be attending a Booksellers convention in Glendale April 27-28, 1990. His address and phone number are:

Natural History Books
Box 1004
Cottonwood, AZ 86326-1004
(602) 634-5016

New Literature:


SCAMIT Officers: If you need any other information concerning SCAMIT please feel free to contact any of the officers.

Officers
President Ron Velarde (619) 226-0164
Vice-President Larry Lovell (619) 945-1608
Secretary Ross Duggan (619) 226-8175
Treasurer Ann Martin (213) 648-5317
It is time for the U.S. to treat the environmental health of the nation and the planet with the same seriousness it devotes to the health of its citizens.

Global deforestation. Mass extinction. Global climate change. Ozone depletion. Acid rain. Pollution and toxic wastes. Rapid human population growth and dwindling natural resources. We face a world in which accelerating social change and global deterioration threaten our security and very survival, especially that of our children. These changes present us with historic opportunities and challenges. Solutions to many environmental problems still lie within reach. But we cannot delay. The problems we face will grow unimaginably more difficult and costly to fix with time.

In the 1940's the United States created the National Institutes of Health to attack serious health problems like cancer and polio. NIH sponsored the pioneering research that led to many of the medical advances that we enjoy today.

It is time for the U.S. to treat the environmental health of the nation and the planet with the same seriousness it devotes to the health of its citizens. It is time to create the National Institutes for the Environment (NIE). The NIH was created from the peace dividend at the end of World War II. The NIE can be created from the peace dividend at the end of the Cold War.

The NIE is an idea whose time has come. A broad national consensus is emerging that more effective action on the environment is needed. We do not own the Earth; we are trustees. If we do not manage the Earth wisely, our children will hold us accountable for its destruction.
National Institutes for the Environment
A Proposal
The Proposed National Institutes for the Environment

The main functions of the NIE would be to 1) sponsor environmental research via grants to universities and other qualifying research organizations; 2) increase the U.S. production of environmental scientists; 3) develop a global environmental data base and national environmental library; and 4) promote public environmental education.

Environmental research would be sponsored through competitively awarded, panel-reviewed grants to individual investigators as well as to multidisciplinary investigative teams. The NIE would sponsor fundamental and applied research among the natural, engineering, and policy sciences. Research would focus on complex issues such as global climate change, sustainable resource use, inventory of biotic resources, habitat destruction, species extinction, and the degradation of the human environment.

Creation of NIE Institutes
A major focus of the NIE would be to satisfy the critical need for more research and better coordination and communication among scientific researchers, environmental managers, and policy makers. To do this the NIE would establish a number of research institutes focused on major environmental problem areas, and whose research would be targeted and coordinated through the administrative umbrella of a guiding committee that would set research targets and policy for all institutes.

Effects of Establishing the NIE
Through these research institutes, guided by a scientific oversight committee, the NIE would forge a new way for all stakeholders in the environment—academic and government research organizations, environmental groups, industry, and policy analysts—to work together and serve society's environmental needs. One mechanism could be regular hearings and periodic formal reviews of institute research programs. Input from all stakeholders in the environment would be invited. This new partnership would lead to:

Improved Environmental Research and Policy Decision-Making
The NIE would promote research among government agencies, academic institutions and industrial scientists, collaborations that currently are difficult to form under our present system of environmental research. Such collaborations would work on common high-priority projects and strengthen the partnership among scientists, managers, and policy makers.

Establishing the NIE would also improve the process of identifying and ranking problems to set a national environmental agenda. The NIE would help set uniform standards and national strategies for environmental action.

Accelerated Progress Toward Solving Environmental Problems
The NIE would foster mission-oriented research based on its agenda of critical environmental problems. It would help determine which problems could be remedied or mitigated, and assess research progress toward solutions. It would monitor the success of practical applications in order to guide future research directions.

Finally, it would provide graduate fellowships to train the next generation of environmental scientists.
The Need for the National Institutes for the Environment

Almost everyone today acknowledges that the environment is in trouble. Recent polls show that the environment and the economy are the top two concerns of Americans. But there is disagreement about the extent and even the nature of the problems.

We still suffer from a profound ignorance about the true state of the environment and the best ways to solve our environmental problems. This lack of understanding has hindered the nation's ability to develop and implement policy for sound environmental management and protection.

Our government cannot enact sensible and enforceable regulations unless the scientific issues are understood, the technological expertise exists, and an informed public creates the political will. The result of poorly conceived regulations based on limited or faulty data and a lack of an informed consensus is a tidal wave of environmental litigation that can cost the nation billions in wasted dollars.

Unfortunately, the nation is ill equipped to meet this environmental challenge. Few Americans are aware of the acute and growing national shortage of qualified environmental scientists. The capacity of colleges and universities to train environmental scientists is disappearing nationwide, largely because funding for programs of environmental research and training is inadequate, unstable, and fragmented. We are unprepared to manage and protect the environment because there is no one to do the work.

The U.S. needs better ways to assign priorities to environmental problems and to seek their solution. We need the National Institutes for the Environment to set the priorities, train the necessary scientists to provide the critical data, and sponsor mission-oriented research that will address the priority problems. The results of this research then need to be communicated efficiently to policymakers and the public.

The NIE would establish a highly credible applied environmental science agency. No present federal agency effectively sets national priorities for research and graduate training in the environmental sciences. The NIE would seek scientific understanding of the environment without bias or preconceived notions, through competitively awarded grants. The NIE would recognize the true multidisciplinary character of environmental problems, and support the natural, social, and engineering sciences. In contrast, much current environmental research is in-house and non-competitively awarded. Too often the research is an ad-hoc reaction to a crisis rather than a carefully planned program to understand the fundamentals of the environmental problem. As a result, environmental research today is of uneven quality and is often conducted by government and the private sector to defend or attack existing or proposed regulations.

We need an agency that will quickly inform policy-makers and the public about new scientific discoveries and technological breakthroughs. The NIE will not be a regulatory agency, but will explore the policy implications of its research programs. A key feature of the NIE will be reevaluating its research progress for policymakers and the public in a timely fashion. NIE research will speed up and improve environmental legislation, rather than be an excuse for inaction.

Finally, we need the NIE because we lack a single, coordinated source for environmental data and information. Monitoring data of vital environmental importance is reported piecemeal, or is restricted or simply unavailable. Development of a successful national and global environmental effort depends critically on having accessible and accurate information. The NIE would create a National Library for the environment, open and accessible to all, and would create and maintain a program on environmental statistics and risk assessment.

The Proposed Organization of the NIE

To stimulate national discussion of the NIE concept, we propose the following organization for the agency. The NIE would house 5 problem-oriented Institutes to fund extramural research and 4 Intramural Centers to provide information and management support for the Institutes.

Institute of Biotic Resources
The Institute of Biotic Resources would support research to inventory the biological diversity of the U.S. and the world and to explore its practical values for humanity. It would support taxonomic research and biogeographic surveys. Research topics would include the causes of extinction, methods of conserving germplasm and the maintenance of captive populations in zoos and arboreta. It would support research to discover and develop unutilized sources of useful natural products such as new medicines and pesticides and new sources for food, fodder, fiber, firewood, timber and other products. It would also sponsor research on the economic valuation of biodiversity.

Institute for Ecosystem Management
The Institute for Ecosystem Management would sponsor research on the interactions of organisms with each other and with their physical environment. Research topics would include ecosystem function in natural, stressed, and managed systems, responses of plant and animal species to environmental change and the causes and consequences of habitat destruction.

Institute for Sustainable Resources
The Institute for Sustainable Resources would sponsor research on the sustainable exploitation of energy, land, soil, water, mineral and biotic (e.g. forest) resources. Research topics would include...
sustainable agriculture and forestry, environmental engineering, restoration ecology, and energy and renewable resource engineering and policy.

Institute of Human Environments
The Institute of Human Environments would sponsor research on the interactions of human societies with their environment. Research topics would include pollution, waste disposal, the economics of environmental degradation and restoration, population growth in relation to resources, conflict resolution over resources and environment, and cultural survival.

Institute of Climate Change
The Institute of Climate Change would support research addressing the effects of climate change on biotic systems, economic development and policy issues. It would monitor biotic responses to climate change and conduct research to anticipate the effects of climate change on ecosystems, food and agriculture.

The Intramural Centers
We envision a series of intramural centers in the NIE that would meet needs shared by all of the NIE institutes. We propose the following 4 centers:

- **Center for Environmental Data Management, Risk Assessment, and Statistics** would fill the critical need for a national database on the environment. It would maintain environmental monitoring records and support methods to catalog and inventory changing patterns of environmental use. It would also analyze trends and assess the hazards of environmental change. It would conduct economic and policy analyses for all the institutes and assist in the process of assigning research priorities.

- **The National Library for the Environment** would provide a center for information on the environment.

- **Center for Environmental Education** would support programs on environmental education to improve public and policy-maker understanding of environmental issues and options for environmental management.

- **Office of Fellowships and Grants** The Office of Fellowships and Grants would administer fellowships and sponsored research programs for all the institutes.

It would provide information services to all NIE institutes as well as other agencies, nongovernmental institutions and the general public.
The Cost of the NIE

Cost estimates for the NIE are presently being prepared, but ball-park figures can be given. It is estimated that about $100 million per year would be required as a minimum starting budget for research ($50 million), graduate training ($30 million), and intramural centers and administration ($20 million). What would this $100 million buy?

**Fundamental and Targeted Research**

A single-investigator award costs between $100,000 to $200,000 per year, including overhead. A multidisciplinary environmental project involving 10 senior scientists costs $2.5 million per year. Thus $50 million would buy between 250-500 individual-investigator grants, or 10-25 teams of scientists working on multidisciplinary projects, or some combination of individual investigators and research teams. If we assume that there are 10 broad fields of environmental research supported by the NIE, then we can fund at most 25-50 grants per field per year, depending upon the mix of awards to individual scientists and interdisciplinary teams.

**Training More Environmental Scientists**

Today the cost of training one environmental post-graduate scientist through the Ph.D. degree is between $12,000-$25,000 per year (tuition plus stipend, excluding research costs), or a total of $48,000-$125,000 per Ph.D. Assuming a 4-5 year degree program, a funding level of $30 million per year would produce 240-600 new Ph.D.’s per year, with a standing number of about 1200 students in the pipeline. Assuming there are 10 broad fields of environmental research supported by the NIE, then we can produce at most about 24-60 new Ph.D.’s per field per year.

**Intramural Centers and Administrative Costs**

Central to the function of the NIE are the intramural centers, including the library for the environment, the environmental data center, and the education center. These centers and administrative offices should be located in the Washington, DC area. The startup cost of these operations is about $20 million per year, exclusive of new construction and equipment costs.

**Projected Costs of the NIE in 5 Years**

The figures above are ball-park minimal startup costs. They fall short of the funds that the NIE will need to train the numbers of environmental scientists that will be required to monitor the environment and solve environmental problems. The NIE will also need funding to support the research of these newly trained scientists in the coming decade. We estimate that the budget of the NIE will grow to about $500 million per year within 5 years (table at left).

**Where Will the Money Come From?**

If the U.S. hopes to deal effectively with environmental problems, new federal money must be allocated to solving them. The estimated costs of the NIE ($100-$500 million) are very modest by health research ($5.5 billion) or military ($200+ billion) standards.

One source of new money comes from the present collapse of the Cold War. This presents the U.S. with an historic opportunity to redirect funds towards solving serious environmental problems. What better time is the nation likely to have than now to create the NIE?

The NIE could also be chartered as part-public and part-private institution, creating opportunities for nongovernmental endowment support, as has been done with the Smithsonian Institution. This approach would help to foment the partnership among industry, government, and academic institutions on research to solve environmental problems.
Creation of the National Institutes for the Environment

National and global environmental change will be a dominant issue that shapes the economic and geographic agendas of the next century. The National Institutes for the Environment will help guide the nation and the world to a more secure and sustainable relationship between humanity and the global environment. Through an innovative feedback of science and policy development, and sponsorship of individual research and multidisciplinary task forces, the NIE will examine priorities, focus research, develop policy, and educate the public on environmental problems of immense practical significance to human progress. A commitment to the NIE will be a legacy for the 21st century of which the nation can be proud and for which the community of nations will be grateful.

For further information on the NIE, contact:

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Paid for by the Committee for the National Institutes for the Environment.
ENGINEERING SCIENCES. DR. HEALEY HIRED TO HEAD FUNDRAISING EFFORTS

Dr. Marcus J. Healey, an environmental scientist with training in ecology and engineering, has been hired to coordinate fundraising efforts and to provide liaison with the physical and engineering sciences. Dr. Healey is working out of Steve Hubbell’s office at Princeton, phone (609) 258-6797, FAX (609) 258-1712.

5. NIE COMMITTEE SEEKS OPERATING FUNDS

WE NEED YOUR HELP TO PROVIDE INITIAL OPERATING FUNDS FOR THE NIE OFFICE. Presently all money received through a contract with the EPA, through the U. of Illinois, and from the Pew Conservation Fellowship goes to salary. AIBS is providing us with facilities, but we must pay for expendable supplies such as postage, FAX, phone calls, photocopying, and brochures. We also need money to support interns and hire a secretary for the Washington office.

We are asking every NIE supporter to contribute $25 - $50 (or whatever you feel capable of donating) to cover initial operating expenses. Contributions of this nature should carry us through the next few months while we pursue larger and more long-term funding arrangements from universities, foundations, and corporations. All contributions to the NIE Committee or to AIBS designated for NIE are tax-deductible, and should be addressed to Dr. Blockstein at the Washington address. THANK YOU.

6. LEGISLATIVE PROGRESS TOWARDS NAS STUDY

There is little likelihood of early passage of legislation to elevate the EPA to cabinet status; the relevant Senate bill is stalled. Separate legislation calling for a National Academy of Sciences study of the NIE concept has been introduced in the House (H.R. 5341) and Senate (S. 2371). S. 2371, sponsored by Sen. Bradley (D-NJ) has been approved in committee. The House bill sponsored by Reps. Saxton (R-NJ), Roe (D-NJ), Scheuer (D-NY) and Schneider (R-RI) must be approved by the Science Committee, which approved similar language as an amendment to the House "EPA elevation" bill last spring. For action this session, both bills must be placed on their respective House and Senate calendars for a non-controversial voice vote before adjournment. However, the EPA is likely to fund the NAS study even in the absence of legislation; the Senate appropriations bill has a line item for the NIE study.

We have heard rumors that the EPA is not likely to fund this study. The EPA has been extraordinarily helpful; our problem is the budget crisis and the possibility of Gramm-Rudman-Hollings sequestration - not any rumored difficulty with EPA.

7. RESEARCHERS NEEDED TO ASSIST IN NIE-RELATED STUDIES

We are looking for researchers to conduct studies of the state of the environmental sciences in the U.S., funding patterns in environmental science disciplines, and the effectiveness of government support for environmental research. These studies may be ideal for students who are looking for senior theses related to science and environmental policy. The results of such studies could be useful to the NAS in their study and to the NIE Committee in filling the terms of our contract with EPA. Contact David Blockstein at the Washington office for details.
8. SCIENTIFIC SOCIETIES CONTACTED

We have sent a mailing to the business offices of some 700 scientific societies with an interest in environmental research. The mailing informs each society about NIE; asks for advice; asks for an official liaison; asks for information about the status of funding and human resources in their discipline; and asks for an endorsement of the NIE concept. Please contact officers of your societies and ask them to respond favorably to this request.

9. SEEKING NAMES FOR NIE MAILING LIST

Thanks you for sending names of your colleagues to be included on the NIE mailing list. PLEASE send us more names, especially of colleagues in non-biological environmental disciplines in the natural and social sciences. Send the names to me at the Chicago office where our master mailing list is presently maintained.

10. CORRECTION REGARDING THE ECOLOGICAL SOCIETY.

In an attempt to be brief in the last newsletter, I stated "ESA has endorsed NIE". Actually ESA has formally endorsed the NAS study of the NIE concept. Sorry for the confusion.

11. POSTER DISPLAY AVAILABLE FOR MEETINGS

Miriam Van Zant has prepared a poster display including art and photography for use at meetings; it has been used at the American Institute of Biological Sciences and at the Missouri Botanic Gardens Symposium (37th Annual). The components can be pinned to a poster board; we can lend them if we have sufficient notice to update material. We would appreciate help with $50 shipping costs (each way). Write to Miriam at the Chicago address.

12. SURVEY OF NIE ACTIVITY ENCLOSED - PLEASE RESPOND

Attached is a survey asking for your assistance in specific NIE-related activities. Please fill out this form and return it to the Washington office.

THANK YOU.
SURVEY OF NIE ACTIVITY

PLEASE FILL OUT AND RETURN TO: Your name and address:

DR. DAVID BLOCKSTEIN
COMMITTEE FOR THE NIE
730 11TH ST. NW
WASHINGTON, DC 20001-4521

Phone: Fax:

We must determine our strength in different parts of the United States; we must know what people are doing, or will do in various academic disciplines. Would you be willing to, or have you been able to, help the NIE effort in the following ways (yes or no):

1. Distribute NIE information to colleagues within your department. Have done Will do

2. Advocate NIE to your Chair or Head? Have done Will do

3. Distribute NIE information to colleagues in other departments in your institution? Have done Will do

4. Distribute NIE information to colleagues in other institutions? Have done Will do

5. Ask your office of research and development, chancellor, president, or other appropriate administrative officer to request support of NIE from the House and Senate delegation from your state? Have done Will do

6. Contact your Representative and Senators yourself? Have done Will do

7. Request support for the NAS study from professional societies? Have done Will do

8. Request endorsement of the NIE concept from professional societies? Have done Will do

9. Assist with fund-raising:
   a. Help write proposals Have done Will do
   b. Contact potential donors Have done Will do
   c. Other Have done Will do

PLEASE SEND ____ COPIES OF THE BROCHURE.

A CHECK FOR $______IS ENCLOSED AS A TAX-DEDUCTABLE CONTRIBUTION FOR OFFICE AND PRINTING EXPENSES.