



## Strategic outlook: Coalition on the Public Understanding of Science

*History suggests that a nation that relinquishes the torch of science puts its future prosperity at risk and jeopardizes its place in the history of civilization. The [National Science] Board believes that we must not let this fate befall our country.*

National Science Board (NSB) 2020 Vision for the National Science Foundation, December 28, 2005

### I. Rationale and Goals

#### Brief Description:

The Coalition on the Public Understanding of Science (COPUS) is a grassroots effort linking universities, scientific societies, science centers and museums, government agencies, advocacy groups, media, educators, businesses, and industry in a peer network having as its goal a greater public understanding of the nature of science and its value to society. A key objective of COPUS is to build bridges among its participants, creating new forums for communication, and developing new partnerships for engaging the public with science.

#### Rationale for COPUS:

Disturbing downward trends in science education, low levels of general scientific literacy, and increasing alarms about US competitiveness necessitate coordinated action by science stakeholders. Specific examples of these concerns include:

- A recent National Science Board poll reports that two-thirds of Americans do not understand what science is, how it is conducted, and what one can expect from it.
- A recent Gallup poll reports widespread and increasingly prevalent belief in pseudoscience.
- There is a growing public complacency about and disengagement from science at the very moment when the impact of science on public life is greater than ever.
- The Business Roundtable of major US companies notes that the scientific and technical building blocks of our economic leadership are eroding at a time when many other nations are gathering strength.

#### The goals of COPUS are to:

- Develop a shared appreciation of science, its contributions to the quality of life, and its underlying role in technology and engineering.
- Inform and engage the public in and about science, its process and products—how it is done, what roles science and scientists play in society, and the benefits of using the process of science to make informed decisions and address challenges.
- Make science more accessible to everyone.

#### To support its goals, COPUS is:

- Building a long-term network among all stakeholders, including the scientific, education, policy, media, government, and business communities, and the general public. Providing a national online searchable directory of its participating organizations' events and programs in the public understanding of science to share information with each other as well as increase public awareness of science activities in their communities.
- Sponsoring and coordinating the Year of Science 2009 ([www.yearofscience2009.org](http://www.yearofscience2009.org)) as a COPUS activity.
- Integrating with other key national resources such as the Understanding Science Web site currently under development ([www.understandingscience.org](http://www.understandingscience.org)).
- Creating forums and building bridges—on the COPUS Web site as well as face-to-face—for sharing ideas, best practices, and resources.

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## **II. Organizational Background and Overview**

### COPUS History:

COPUS originated from a workshop funded by the National Science Foundation (NSF) and convened by the University of California Museum of Paleontology, in Berkeley, CA, 25-27 January 2006. This was followed by a series of additional workshops, also funded by NSF, to further define the goals and objectives of the Coalition.

### COPUS Operational Structure:

There are multiple leadership tiers within COPUS including 1) Steering Committee, 2) Action Team, and 3) Regional Hub leaders.

#### *1) Steering Committee*

A multi-disciplinary Steering Committee directs COPUS initiatives. Steering Committee members are:

- Lee Allison, Director, Arizona Geological Survey
- Jack Hehn, Director of Education, American Institute of Physics
- Jack Hess, Executive Director, Geological Society of America
- Jay Labov, Senior Advisor for Education and Communications, National Academy of Sciences
- Richard O'Grady, Executive Director, American Institute of Biological Sciences
- Judy Scotchmoor, Assistant Director, University of California, Museum of Paleontology, Education and Public Programs

These members represent diverse sectors of the scientific research community responsible for establishing the COPUS network. They meet via teleconference on a regular basis and are the decision-making body for all fiduciary and program resolutions. They provide guidance to the COPUS Action Team.

#### *2) Action Team*

Many of the day-to-day activities required for the national development of COPUS programs are carried out by a group of individuals, the COPUS "Action (A) team." The A Team is composed of two Steering Committee members (noted by the \* below) and a handful of enthusiastic individuals nominated by the COPUS Steering Committee to work together in shaping and developing COPUS initiatives. The primary functions of the A Team are to inform and engage their representative communities in COPUS; promote and represent COPUS locally, regionally, and nationally; seek potential funding resources for COPUS; and communicate on a regular basis to identify and implement COPUS projects and activities. Members of the Action Team are:

- Melissa Anley-Mills, News Director, Office of Research and Development, EPA
- Jennifer Collins, Science Teacher (7<sup>th</sup> Grade). South County Secondary School, Lorton, VA
- Michael LeMaster, AIBS SPARS, Project Coordinator
- Chris McLelland, Teacher (K-12) Programs, in Geological Society of America's Education and Outreach Department
- Holly Menninger, AIBS COPUS Activities Manager & AIBS Public Policy Associate
- Richard O'Grady\*, AIBS Executive Director
- Sheri Potter, COPUS Network Project Manager
- Judy Scotchmoor\*, Assistant Director, University of California, Museum of Paleontology, Education and Public Programs

#### *3) Regional Hub Leaders*

COPUS Regional Hub leaders serve a vital role in the day-to-day development of geographically localized COPUS initiatives. Hub leaders facilitate the organization and development of regional activities to celebrate Year of Science 2009 and promote Coalition initiatives.



## **II. Organizational Background and Overview (Continued)**

### COPUS Participants:

The Coalition invites the participation of any organization that has an interest in promoting the public understanding of science as an intellectual and social endeavor by which humans learn about the world through empirically-based observations, testing, and prediction. The Coalition has a broad and diverse membership including large scientific societies, museums, and educational organizations as well as dance troupes and local government agencies. Applying to join COPUS is completed via an online registration form.

### Funding and Support:

Support for COPUS planning workshops was provided by the National Science Foundation under Grant Nos. EAR-0606600 and EAR-0628790 to the University of California Museum of Paleontology. Initial contributions of funds and services have been provided by: the American Institute of Biological Sciences, the Geological Society of America, the University of California Museum of Paleontology, and the National Science Teachers Association. The cognizant fiduciary body for COPUS and the Year of Science 2009 project is the American Institute of Biological Sciences Inc., a 501(c)(3) nonprofit organization, which is providing staffing support, IT, and other resources.



### **III. COPUS Activities Overview**

#### COPUS Clarion

The *COPUS Clarion* newsletter is the monthly internal communication of the COPUS network, where innovative program ideas, and COPUS news developments are shared.

#### Program and Resource Directory

The public understanding of science Program and Resource Directory is a searchable database that aggregates information about programs, events, and resources in science. This directory is freely accessible to the general public, education, and scientific communities. The directory serves to raise awareness of the diversity of programs being offered by the science community. It encourages sharing of resources between network participants and highlights exemplary programs. It serves as a central repository for programs and resources that encourage science engagement and learning.

#### Regional Hubs of activity

A COPUS Regional Hub is a locally-based community of COPUS participants and science stakeholders that work together within a designated geographic region to promote the public understanding of science. Its members are self-determined and can include scientists, universities, K-12 educators, informal science education centers, business leaders, and other professionals who work together to develop or coordinate activities that engage community members in science. Its activities are self-determined, but have as their focus the public understanding of and engagement in science. A single COPUS participating organization serves as the "host" of the Hub and as the liaison to the COPUS network.

#### Understanding Science Web site

Understanding Science is a new content-rich Web site being developed at the University of California Museum of Paleontology in concert with several partners. Set to launch in 2008, this freely accessible resource will provide an accurate portrayal of science - what it is and how it works - as well as tools for teaching associated concepts. Several features are being developed in support of the COPUS and Year of Science 2009 efforts including a Gallery of Scientists and an Amateur Hall of Fame, both of which will highlight how scientific research is conducted.

#### Year of Science 2009

1 January 2009 - 31 December 2009: Year of Science 2009 is a nationwide celebration of science focusing on the theme, "How We Know What We Know." Led by members of the COPUS community, activities are being coordinated that will stimulate interest in and appreciation of the process and nature of science.

As they plan for 2009, participating organizations will share program ideas that focus on how science plays a vital role in the future of humanity and inspires the best qualities of the human spirit. These may include: hosting free public lectures or programs at museums and science centers; providing citizen science opportunities; connecting COPUS participants with the K-12 community; participating in roundtable discussions; producing radio spots, editorials, or online resources; starting a local Science Café; or adopting the theme of public understanding of science at annual meetings held in 2009.

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## **IV. Focus and Objectives for 2007**

COPUS will work to build and strengthen the COPUS network; identify and implement core COPUS services.

### **1. Build the network:**

- At least one COPUS participant in every state.
- A minimum of 150 total participants.
- Diversity in participation from all scientific stakeholders. Invitations to participate to be sent to no less than:
  - 10 members from businesses and industry community.
  - 10 representatives from media/communications community.
  - 10 representatives from organizations that represent traditionally underrepresented communities in science.
  - 10 representatives from groups that celebrate science through arts and humanities activities.

### **2. Strengthen the network**

- Assemble an "Action Team" of five enthusiastic Coalition members, representing various stakeholders, to facilitate communication and collaboration across the scientific spectrum.
- Establish a minimum of five regional COPUS Hubs, which are locally organized communities of COPUS participants and science stakeholders. For a more in depth description visit the COPUS Web site at [http://copusproject.org/regional\\_hubs.php](http://copusproject.org/regional_hubs.php).
- Articulate concept of "thematic hubs" to build bridges between the research and science education and outreach communities.

### **3. Initiation and development of resources**

- Develop the COPUS Registry -- an online database in which COPUS organizations and individual researchers can register their programs, resources, and events that promote the public understanding of science.
- Develop the COPUS Program and Resource Directory -- an online searchable listing of registered COPUS participants and their programs, resources, and events that promote the public understanding of science, including lectures, Web sites, publications, field trips, volunteer programs, science cafes, and speakers bureaus. The Directory will help all members of the public become aware of activities and resources in their communities and across the country.
- Develop and distribute a monthly newsletter – the *COPUS Clarion* – to facilitate communication with participants.
- Promote events that showcase and celebrate science, with a focus toward the Year of Science 2009.

### **4. Support and Promote Year of Science 2009**

- Encourage professional societies to include the public understanding of science and Year of Science 2009 as a thematic strand within their annual meetings in 2009.
- Encourage participant registration of all activities in the COPUS registry.
- Highlight participant activities on the COPUS Web site.
- Build awareness and support for Year of Science 2009 among members of the science policy community, including members of Congress, federal agencies and officials, and state decision-makers.

#### **NOTE:**

For Summary of progress in 2007, see Addendum A.

## **V. Focus and Objectives for 2008**

COPUS will continue building and strengthening the network; implement new resources as dictated by Coalition members; focus on supporting and promoting participant activities for Year of Science 2009.

### **1. Build and strengthen the network**

- Host two meetings of COPUS and Hub liaisons.
  - The first meeting (March 2008) to promote a high level of discourse to inform our efforts and produce a procedural plan and set of tools for implementing a Hub network structure.
  - The second meeting (late in 2008) to include discussions about Hub activities and best practices; strategies for community support; needs to be met by COPUS headquarters; dissemination of resources; and expanding the Hub system.
- Increase the number of Regional Hubs to a minimum of 12.
- Increase the COPUS participant list to a minimum of 250.
- Work with Sigma Xi and WGBH to increase the number of registered Science Cafes to a minimum of 100, with distribution in every state.

### **2. Resource development**

- Develop a modifiable evaluation instrument for use by COPUS participants in order to capture baseline data on effectiveness of Year of Science 2009 activities.
- Introduce Web-based resources to facilitate collaboration among participants.
- Provide communication resources for COPUS participants:
  - Develop COPUS Commons, an online communication tool to serve the needs of the COPUS Hubs and participants.
  - Develop and distribute tool-kits for promoting activities and understanding of science to the public and the media.
  - Encourage workshops to train scientists on effective communication with the general public and the media.
- Expand the COPUS database to include:
  - Registration of broader impact activities dealing with the public understanding of science to include overview of activity and results.
  - Access to online program evaluations.

### **3. Support and promote Year of Science 2009**

- Develop public-friendly Web site to include:
  - Searchable database and Google map of 2009 activities.
  - Downloadable promotional materials.
  - Ideas and tool kits for 2009 activities.
- Seek corporate sponsorship at the local, regional, and national levels for promotional items and activities
- Continue dialogue with science policy community about Year of Science 2009, including the pursuit of Congressional and state resolutions supporting Year of Science 2009 efforts.

## **VI. Focus and Objectives for 2009**

COPUS will continue building and strengthening the network; implement new services as dictated by Coalition members; focus on supporting and promoting participant activities for Year of Science 2009.

### **1. Build and strengthen the network**

- Coordinate a meeting of the Hubs to continue to build the network and share best practices, develop strategies, and discuss partnerships.
- Increase the number of Regional Hubs as guided by the meeting.
- Increase the COPUS participant list to a minimum of 500.

### **2. Support and promote Year of Science 2009**

- Distribute the evaluation instrument and encourage its use.
- Expand the COPUS database to include results from evaluation.
- Promote Year of Science 2009 activities.
- Promote and distribute communication resources.

### **3. Initiate plans for COPUS 2.0**

- Hold regional workshops to evaluate the impact of the Year of Science 2009 activities, as well as the collaborations formed through COPUS, with a focus on what was achieved and how to sustain the momentum of these activities.
- Recommend next steps.

## **VII. Addendum A**

### **Summary of progress for 2007**

COPUS successfully worked to build and strengthen the COPUS network; and identify and implement core COPUS services in 2007.

#### **1. Summary of progress with respect to network development:**

- At least one COPUS participant in every state. *Participation was achieved in 34 states by the end of 2007. States which remained unrepresented at the conclusion of 2007 were: Delaware, Hawaii, Mississippi, Montana, Nebraska, Nevada, New Hampshire, New Mexico, North Dakota, Ohio, Oregon, Rhode Island, South Carolina, Texas, Vermont, and Wisconsin. We anticipate meeting this objective by June 30, 2008.*
- A minimum of 150 total participants. *This goal was surpassed with the registration of 157 participants in 2007.*
- Ensure diversity in participation from all scientific stakeholders. Invitations to participate to be sent to no less than:
  - 10 members from businesses and industry community.
  - 10 representatives from media/communications community.
  - 10 representatives from organizations that represent traditionally underrepresented communities in science.
  - 10 representatives from groups that celebrate science through arts and humanities activities.

*Diversity in participation was achieved including representation from each of these invited group types.*

#### **2. Strengthen the network**

- Assemble an "Action Team" of five enthusiastic Coalition members, representing various stakeholders, to facilitate communication and collaboration across the scientific spectrum. *This goal was surpassed, and an action team was built with 7 members. Team members include: Melissa Anley- Mills, Jennifer Collins, Chris McLelland, Holly Menninger, Richard O'Grady, Sheri Potter, and Judy Scotchmoor.*
- Establish a minimum of five regional COPUS Hubs, which are locally organized communities of COPUS participants and science stakeholders. For a more in depth description visit the COPUS Web site at [http://copusproject.org/regional\\_hubs.php](http://copusproject.org/regional_hubs.php). *This goal was surpassed and eight locations for regional hubs were identified, Ann Arbor, MI; Cambridge, MA; Chicago, IL; Research Triangle, NC; San Francisco Bay area, CA; Seattle, WA; South Dakota; Tampa Bay, FL.*
- Articulate concept of "thematic hubs" to build bridges between the research and science education and outreach communities. *This general concept was articulated and will be further developed in 2008.*

#### **3. Initiation and development of resources**

- Develop the COPUS Registry -- an online database in which COPUS organizations and individual researchers can register their programs, resources, and events that promote the public understanding of science. *This resource was developed and utilized by network participants. In response to COPUS members, further modifications to the Registry were made to allow multiple individuals within each registered organization to add their organizations programs and resources.*
- Develop the COPUS Program and Resource Directory -- an online searchable listing of registered COPUS participants and their programs, resources, and events that promote the public understanding of science, including lectures, Web sites, publications, field trips, volunteer programs, science cafes, and speakers bureaus. The Directory will help all members of the public become aware of activities and resources in their communities and across the country. *This directory was developed and at the conclusion of 2007 included over 100 resources, programs, and events.*

## **VII. Addendum A, p.2.**

### **3. Initiation and development of resources, cont.**

- Develop and distribute a monthly newsletter – the *COPUS Clarion* – to facilitate communication with participants. The *COPUS Clarion* was first published and distributed to participants in September 2007, and was followed by additional editions in October and November. Articles covered featured programs of participants, and network updates. Archives of the Clarion are available on the COPUS Web site.
- Promote events that showcase and celebrate science, with a focus toward the Year of Science 2009.
- Participant activities were highlighted on the COPUS Web site home page, on the Year of Science entry page, and in the *COPUS Clarion*. Regionally specific events were promoted to invite participation of individuals who would benefit from the programs or services.

### **4. Support and Promote Year of Science 2009**

- Encourage professional societies to include the public understanding of science and Year of Science 2009 as a thematic strand within their annual meetings in 2009. *This goal was met, some exemplar societies that expressed their commitment to celebrating Year of Science 2009 at their annual meeting include: the Association of Science and Technology Centers, the American Institute of Biological Sciences, and the National Science Teachers Association. Other organizations expressed their intent, in 2007, but formal plans were not finalized. This goal will be further developed in 2008.*
- Encourage participant registration of all activities in the COPUS registry. *This goal was achieved by encouraging participants to register their programs and events upon their email welcome to the Coalition. In addition, groups were encouraged monthly through the COPUS Clarion, and through personal email correspondence and conversation with COPUS Action Team members.*
- Highlight participant activities on the COPUS Web site. *This goal was met. Additionally, Web site enhancements were made to improve the functionality of featuring programs on the COPUS Web site home page. Programs were also highlighted on the Year of Science 2009 page within the COPUS Web site.*
- Build awareness and support for Year of Science 2009 among members of the science policy community, including members of Congress, federal agencies and officials, and state decision-makers. *COPUS secured support and participation from a number of federal agencies, including the National Institutes of Health, the National Oceanic and Atmospheric Administration, and the EPA, as well as key organizations within the science policy community. Team members will continue to build awareness throughout 2008, with a special focus on state decision-makers.*