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The National Allergy Bureau: Pollen and spore reporting today

The National Allergy Bureau (NAB) is part of the Aeroallergen Network of the American Academy of Allergy, Asthma and Immunology (AAAAI). The mission of the NAB is to promote optimal pollen and mold spore data collection for the public domain, medical profession, and scientific community through standardized pollen and mold counting. It is chiefly responsible for collecting, archiving, and reporting current pollen and mold spore levels to the media and the public.

The NAB is composed of a group of more than 80 pollen- and spore-counting stations throughout North America known as the Aeroallergen Network. The core functions of the NAB are funded by the AAAAI. The majority of the work of the NAB is performed by AAAAI member volunteers who donate the time and expertise necessary to supply the public with accurate estimates of airborne allergen containing pollen grains and fungal spores. The Aeroallergen Network member stations collect airborne pollen and spores for aerobiology research and to aid in the diagnosis and treatment of allergic diseases. Member stations electronically enter pollen and mold counts into a master database operated by Data Harbor under contract to the AAAAI. Summaries of these counts are made available to the public through individual Internet inquiries and through local and national media outlets.

Since Blackley[1] first linked airborne pollen grains and fungal spores to allergic disease, medical practitioners have realized the importance of accurate information regarding environmental exposures to the management of allergic disease. The data presented by the NAB provides a rough estimate whereby individuals and allergists can gauge allergen exposure. On the basis of data collected over several years, a scale for exposure has been developed (Table I).[2] For ease of interpretation, the scale is divided into exposure for trees, grasses, weeds, and molds, with 4 levels of exposure for each. Even though these values are based purely on statistical considerations and individual exposure thresholds will vary with individual sensitivities, they are still a practical guide for exposure and allow comparison between sites across the country.

The NAB provides the most accurate spore and pollen data available. To become a contributing station of the NAB, the persons performing the counts are required to become certified and to maintain their certification. The AAAAI certification program is administered through the AAAAI Aerobiology Committee. Certification currently requires participants to accurately identify and count pollen and mold spores on at least 3 quality control slides. Once certified, a station must sample a minimum of 3 days per week with a Burkard volumetric spore trap, a Kramer-Collins sampler, or a Rotorod sampler. The sampler must be situated on an unobstructed rooftop at least one story above ground with no unusual local sources of pollen spores, mold spores, or both in the immediate vicinity. The certification of counters and counting stations provides for a measure of quality control and standardization that is superior to any other aeroallergen-reporting source.

TABLE I. The NAB scale for interpreting pollen and spore levels

Mold	Grass	Trees	Weeds
0, Absent	0, Absent	0, Absent	0, Absent
1-6499, Low	1-4, Low	1-14, Low	1-9, Low
6500-12,999, Moderate	5-19, Moderate	15-89, Moderate	10-49, Moderate
13,000-49,999, High	20-199, High	90-1499, High	50-499, High
>50,000, Very high	>200, Very high	>1500, Very high	>500, Very high

TABLE II. Committee chairs and significant events for the NAB

Year	Aerobiology chair	Significant events
-1990	Jean Chapman	Along with Harriett Burge began approved station and countercertification program
1991-1993	Warren Filley	Aeroallergen Network established; 50-pollen and 36 spore-certified stations. VH, H, M, and L levels for pollen and spores set
1994-1995	Jacob Pinnas	Approved stations in 31 states and Washington, DC. Media network established. NAB conceived.
1996-1997	Don Pulver	Burkard collectors purchased with external funding. Concept of NAB developed.
1998-1999	Linda Ford	Aeroallergen Network disburses Burkard collectors. NAB begins pollen and spore reports through the AAAAI Web site.
2000-2001	Jay Portnoy	NAB Web site reorganized. Data Harbor contracted to develop NAB Web site and organize data.
2002-2003	David Weldon	NAB Web site with online reporting initiated. Educational Web site content initiated.
2003-2004	Dick Weber	Online reporting developed and refined. New certification and education process begins.

For over 40 years, community allergists and academic aerobiologists, first under the auspices of the Pollen and Mold Committee of the AAAI and more recently as part of the Aerobiology Committee of the AAAAI, have produced daily estimates of airborne allergen–containing particles. In the early 1980s, members of the AAAI Aerobiology Committee envisioned a central data repository for these pollen and spore counts. Along with this central repository, they envisioned improving and standardizing collection and counting practices, as well as an educational and certification program for individuals performing these counts. Recent AAAAI Aerobiology Committee chairpersons and significant events during their tenure are listed in Table II.

Statistical reports of the Pollen and Mold Committee of the American Academy of Allergy have been produced for many years. The authors are aware of a report as early as 1973, when Bill Solomon was chair of the committee. This compilation presented reports from 85 counting stations in the United States, Australia, Canada, Germany, France, Turkey, Taiwan, and the Dominican Republic. The first aeroallergen national report was produced in 1992.[3] It contained summaries of reports from 66 collecting stations. As the network expanded and computerized electronic information exchange became widely available, several members of the Aerobiology Committee, as well as the AAAAI board of directors, began to envision mechanisms to deliver accurate daily pollen and spore count information to the general public. The earliest mention of the NAB that could be found was in the minutes of the Aerobiology Meeting at the 1995 Academy International Meeting in New York, when Jacob Pinnas was chair. The NAB was first listed as part of the yearly pollen and mold spore report in 1997.[4]

In the early 1990s, the advances in information technology were coming fast and furiously. The Internet was moving from an esoteric, hard-to-navigate network for a few university scholars to an easy-to-navigate method for efficiently disseminating information to large numbers of people. The other realization concerning the Internet was that advertising would drive it. Many members of the Aerobiology Committee were aware of these factors and saw the public relations potential of the data generated by the Aeroallergen Network. However, exploiting public relations possibilities was in some conflict with the more purely academic pursuits of many of the founders of the network. As a compromise, a separate function was set up within the AAAAI to exploit the public relations value of pollen and spore data. This function was called the NAB. Counting stations were encouraged to send fax reports of their daily results to the NAB and monthly summaries of their results to the aeroallergen network. The daily fax reports were typed into the NAB area of the AAAAI Web site and displayed to the public. The monthly reports, which contained much more detailed data, were compiled into the yearly pollen and spore reports.

In the latter part of the 1990s, Don Pulver, the then chairman of the aerobiology committee, and Harriett Burge, who ran the Aeroallergen Network, were able to secure a substantial grant that enabled the AAAAI to acquire 80 Burkard collectors. This acquisition improved the network in 2 areas. First, the new collectors produced substantially better spore counts, especially for smaller spores, including many ascospores. Second, the promise of a free collector allowed

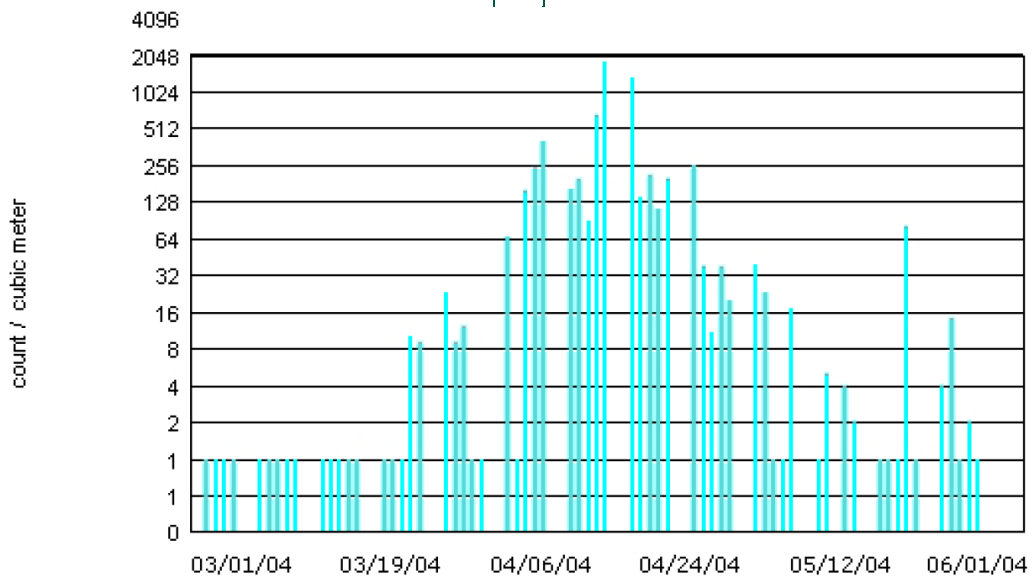

FIG 1. 2004 Oak pollen season for Kansas City, Missouri.

the network to expand into geographic areas not previously covered.

By the end of the twentieth century, the Internet had become fully developed, and the conflict between the academic approach to spore and pollen data and the public relations approach came to a climax. At the same time, and perhaps as part of the conflict, the major industrial source of funds of the Aeroallergen Network withdrew support. Also, as a result of funding difficulties and other conflicts, Harriet Burge and her group resigned as the certifying agent for the Aeroallergen Network. This produced a crisis in the Network and the NAB. In response, the AAAAI stepped forward with funding and the chairman of the aerobiology committee, along with several past aerobiology chairs and the AAAAI executive board, started a reorganization of the counting network. Estelle Levetin agreed to assume the responsibilities for certification of persons to count pollen and spores. A request for proposals to reorganize the data collection process was published, and subsequently, a contract was awarded to Data Harbor to design and implement a new NAB Web site.

The Data Harbor contract was composed of 2 phases. The first phase was to develop and implement a real-time data entry system for the member stations of the NAB and to organize the data for efficient presentation to the public through the NAB Web site. This phase has been fully implemented. The second phase was to reorganize the certification process for pollen and mold spore counters to allow for more timely and efficient certification and recertification. This phase should be implemented this year.

Today, the NAB is thriving on the Internet. At this time, there are 80 counting stations throughout the United States and 2 counting stations in Canada. The stations report their data directly over the Internet. After a daily count is obtained, individual counters log on to their personalized NAB page and enter their data directly. The counters have the ability to customize their reporting page to contain the spore and pollen types they most frequently encounter. This allows counters from varying parts of the country to adapt their reporting to their specific needs. Reporting pages can even be changed to accommodate seasonal variations. Once the daily data have been entered, the counter submits the numbers to the NAB. Depending on the desires of the individual counting station, the data are accessible on the public portion of the NAB Web site as either specific numbers or as low, medium, high, or very high for weeds, trees, grass, and spores. The public information pages are therefore adaptable to the data security preferences of the individual counting stations.

There are several additional services available to the individual counter. Individual historic counts can be displayed for selected dates. And data records for individual genera can be displayed graphically for specified time periods (Fig 1). This allows the individual counting station to track daily counts for specific genera throughout an entire season and even produce figures for poster presentations and publications.

In addition to the reporting function of the NAB Web site available to counting stations, there are several information modes built for the general public. Primarily, the public will access the general information page. The visitor can point to a particular area of the map of the United States and get the most recent pollen and spore count. Counts can also be obtained directly from selected counting stations. A member of the public who has more interest in pollen

and spore information can set up an NAB account. In exchange for a small amount of personal information, the NAB account (my NAB) provides many benefits. The individual can create a personalized page with custom content. For instance, counts for several stations in different areas of the United States can be displayed. The individual can elect to receive automatic e-mail alerts with pollen and spore counts from selected locations. The individual can elect to receive e-mail information bulletins from the NAB for selected events. Personal information is completely private and secure and is not distributed without permission.

The current form of the NAB Web site is well situated to take advantage of the interest of the 50 million Americans who have some form of allergic disease. These people can benefit from accurate and up-to-date information. In the NAB Web site, these persons can find resources, including the latest statistics and the most current information about allergic and immunologic diseases.

A member of the AAAAI can establish an NAB account with additional benefits. Beside the ability to create an NAB page with custom content and to receive automatic e-mail alerts and bulletins, a member can access educational pages. These include an extensive gallery of pollen and spore images and the list of the top aeroallergens in North America prioritized for allergen standardization by a subcommittee of the AAAAI Immunotherapy Committee.

Presently, the Aerobiology Committee is in the process of adding the certification, recertification, and quality control processes on line. There are plans for having all of the certification processes except the final microscopic counting examination accessible through the Web site.

In addition to the information available to the general public, the NAB data archive contains a great deal of electronically retrievable information. As this archive grows, there is the possibility for industrial concerns to negotiate for access to and use of this data for specific purposes. To date, most of the commercial interest has been in the yearly pollen and spore reports, and several of these have been purchased. In the future, this electronically searchable data archive should become a valuable asset of the AAAAI.

Like the legendary phoenix rising from the ashes, the NAB has endured hard times to become a strongly Internet-adapted mechanism for collecting and disseminating pollen and spore information. Every day during the pollen and mold season, dozens of counting stations throughout North America submit their data online, and thousands of patients with allergies retrieve information valuable to their daily lives. With continued AAAAI support and the volunteer efforts of numerous academic and private allergists, the NAB will provide this valuable information well into the future.

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