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The Botanical Society of America: The Society for ALL Plant Biologists

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BOTANICAL SOCIETY OF AMERICA

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At about this time every year we hear and see about wild fires “destroying” thousands of acres of forest in Florida or the West. Our own meeting site this year in Albuquerque is near the site of last year’s most famous wildfire that started as a controlled burn and eventually threatened the National Laboratory at Los Alamos. As botanists we realize that far from destroying the natural ecosystem, fire is often a necessary component for maintaining the vitality of that system. In fact, the plants native to these systems have evolved adaptations that not only protect them from the effects of fire, but may require fire to ensure reproductive success. What strange concepts these must be to an uninformed public (especially those of a generation that remembers Smoky’s motto - - “Only you can prevent forest fires!”)

The feature article in this issue describes a curriculum designed not only to educate children about the ecology of wildland fires, but helps ameliorate the phenomenon described in the spring issue – “plant blindness.” It incorporates active learning principles and helps students to view plants as participants in an active ecosystem – not just “fuel for the fire.” If you find the program interesting, I encourage you to contact the authors for more information. They are extremely enthusiastic and willing to share.

- editor



Educational Program about Wildland Fire Integrates Plant Science into Curriculum

A science fiction story by Edmond Hamilton entitled “Alien Earth” (Hamilton 1949) describes the experience of a young scientist in a tropical country. The scientist obtains a potion that slows his physiology to a rate at which he can perceive plant growth and interactions between plants in rapid, aggressive, even violent motion. He is entranced and refuses to return to a pace of life “normal” for human beings. How can teachers help their students see that plants really are this dynamic and interesting? We have found one way to focus classroom attention on plants. View them as participants in, and survivors of, one of the most dramatic agents of change in temperate ecosystems—wildland fire. During the past three years, we have developed, tested, and implemented *FireWorks*, an interdisciplinary, inquiry-based program for learning about fire behavior, ecology, and management. The program applies ecological concepts to three kinds of pine forest important in the western U.S.: ponderosa pine (*Pinus ponderosa*)/Douglas-fir (*Pseudotsuga menziesii*), interior lodgepole pine (*Pinus contorta* var. *latifolia*)/subalpine fir (*Abies lasiocarpa*), and whitebark pine (*Pinus albicaulis*)/subalpine fir (*Abies lasiocarpa*). *FireWorks* is an example that may help others design programs that entice students to learn more about plants, integrate their knowledge with other disciplines, and apply it to problem-solving situations.

FireWorks consists of a curriculum linked with an educational “trunk.” The curriculum (Smith and McMurray 2000) provides structured programs of learning activities for students at the primary, elementary, middle, and high school levels, and has also been used for college-level instruction. All learning activities in the curriculum use materials

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from the trunk, which is available for loan to teachers. The trunk contains laboratory equipment, plant specimens, kits for feltboard stories and learning games, posters, CD-ROMs, videotapes, and reference books—all focused on learning about wildland fire. Eighteen copies of the trunk are currently in circulation in Montana and Idaho.

Plant Study in an Interdisciplinary Program

Concepts of energetics form the foundation of fire science. Plants use photosynthesis to capture and store energy from the sun. This energy is released for metabolism by plants themselves and also by non-photosynthesizing organisms. It can also be released by one non-metabolic process—fire. Most students study photosynthesis and metabolism in biology classes and learn about fire behavior in physical science classes. However, these topics can be more compelling when studied together. In *FireWorks*, students construct “matchstick forests” from matches, masonite, and simple hardware. They develop hypotheses regarding the effects of slope and stand structure (density and arrangement of trees) on fire spread in these model forests, then test the hypotheses (fig. 1). Students construct “tinker trees” (fig. 2) to learn about the effects of tree and stand structure on vertical fire spread. The curriculum presents these activities as guided inquiries, with suggestions for open inquiries as follow-up. At the University of Montana, these fire behavior experiments are used in a chemistry survey class for non-majors. More than half of students who take the course are majoring in Forestry or Wildlife Biology, fields directly concerned with fire behavior, fire effects, and fire management.

Fire provides a context in which morphological properties of plants are vividly related to survival and persistence. Organs such as rhizomes and bulbs, for instance, have increased importance to students when viewed as strategies for surviving and regenerating after fire. The thickness of tree bark becomes more than a curiosity;

it is a species-specific characteristic allowing variable protection of phloem and cambium from lethal heating. In *FireWorks*, students learn about underground plant parts (“buried treasures”) by first observing aboveground parts such as flowers and leaves from specimens, then hypothesizing (“imagining”) and drawing the underground parts that they think those plants might have. This work encourages them to consider the difficulty of



Figure 1. Experiment illustrates effect of slope on fire spread.

protecting a plant’s living cells from fire. After they view each plant’s “real” buried treasure (fig. 3), they discuss how it functions. Middle and high school students learn about the insulating properties of tree bark by recording temperature change over time on a physical model of a tree, in which a newspaper-covered coffee can represents the tree’s cambium, multiple layers of quilt batting represent bark, and a hair dryer produces heat.

Understanding of tree physiology is crucial to dendrochronology, which *FireWorks* students use to describe historic fire regimes (patterns of fire frequency and severity prior to drastic ecosystem

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alteration by European Americans). By identifying scars made by surface fires, counting growth rings between fire scars, and comparing the life spans of the three pine species used in the curriculum, students learn three basic principles of fire ecology:

1. Many kinds of trees, as well as other plants, are able to survive some fires
2. A plant's ability to survive fire depends partly on traits of the plant itself and partly on characteristics of the community in which it occurs
3. Different plant communities, even those occurring in close proximity, may have different historic fire regimes

Students use reference materials in the trunk to learn about several organisms in each forest type. Then they collaborate to depict the flow of energy from the sun throughout the resource web, and to dramatize secondary succession in different kinds of forest with and without fire.

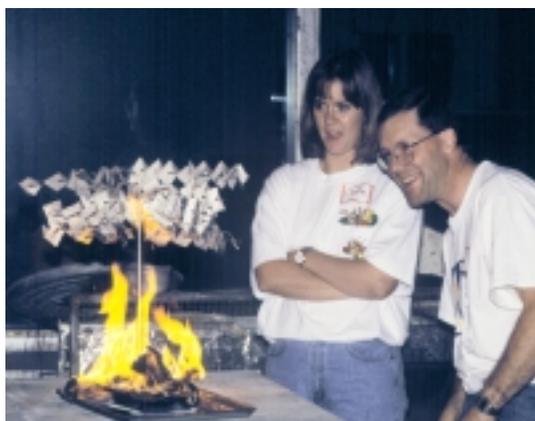


Figure 2. Teachers at workshop use a model tree to investigate effect of tree and forest structure on fire spread.

Applying What is Learned

Real-world problems bring scientific concepts to life for many students. *FireWorks* requires students to use what they learn about fire spread, plant functions, and ecosystem dynamics to address real management questions. Students assess risk of fire damage to homes built in wildlands. They use a CD-ROM simulation of fire in ponderosa pine forests to compare fire behavior and effects following three management choices: removing small trees, removing small trees and burning with surface fire, and taking no action. They work in teams to develop objectives and management plans for several scenarios, including a home and acreage

surrounded by ponderosa pine forest, a forest recently burned by stand-replacing fire, and a whitebark pine forest threatened by a nonnative invasive fungus. Learning activities that involve management options do not have “right” and “wrong” outcomes but require students to use scientific principles to connect current conditions and management choices to likely outcomes. This sometimes results in disagreement and controversy in the classroom; if the disagreements are based on principles of physical and plant science, they are a sure sign that students are synthesizing and applying what they have learned.

Field experience provides the logical capstone for studying wildland fire. *FireWorks* suggests that teachers use one of two field activities—a “scavenger hunt” for signs of past fires and their effects, or a field quiz in which students demonstrate principles learned in the classroom. Local experts and forests provide many other options for field experiences. This past summer, we used a tour of a field site on which prescribed fire had been used, guided by a research ecologist, as a forum for college-level students to observe and critique fire management; it was also an opportunity to learn about careers in land management and plant science.

Strengths and Limitations

Since 1998, over 300 teachers have attended workshops on *FireWorks*, learning to teach from the curriculum and trunk, and the program has reached more than 3,000 students. The *FireWorks* curriculum can be used to meet local and national teaching standards. Research indicates that the program successfully increases understanding of wildland fire behavior among students and adults. Funding to obtain trunks and time for trunk maintenance are the main obstacles to program implementation.

To determine the effectiveness of *FireWorks* in a school setting, Thomas and others (2000) tested 313 seventh graders from 12 classrooms in western Montana. Written tests showed that students who used *FireWorks* mastered fire behavior and ecology concepts better than students in comparison groups ($p < 0.0005$). In field tests, students who had studied *FireWorks* demonstrated greater understanding of fire behavior and ecology than students in comparison groups ($p < 0.0005$). *FireWorks* students perceived their teachers as significantly more innovative and interested in student contributions than did students in comparison classrooms ($p < 0.0005$). The authors attributed success of the program to the structured, interdisciplinary curriculum and reliance on hands-on materials. Success may also be attributed in part

to the subject-matter itself—fire, a compelling topic for most audiences.

Parkinson (2001) assessed the effectiveness of *FireWorks* in programs for adults in rural communities of Idaho. She found that, one month after completing four *FireWorks* learning activities at a workshop, adults showed significantly increased understanding of wildland fire ($p < 0.0001$). In addition, attitudes and beliefs about fire management were significantly ($p < 0.05$) more positive, both immediately and 1 month after the learning activities were completed.

Requirements for funding and time are the main limitations of the *FireWorks* program.



Figure 3. High school student examines “buried treasure” of beargrass (*Xerophyllum tenax*).

Hands-on learning in general requires more materials, more space, and more classroom management than lecture-based learning. It is also slower in the sense that fewer concepts can be covered in a given time, though it may not be less efficient in terms of knowledge retention. *FireWorks* trunks cost \$3,000 to \$3,500 each, an investment few schools can make. Most trunks are owned by agency offices or nature centers and loaned to

teachers for 2 to 3 weeks at a time. After a trunk is returned from a loan, 2 to 4 hours are needed to check its contents, fix or replace items, and put all in order for the next loan; this requires time and resources from the loaning agency or nature center. Teachers can mitigate these limitations by selecting a small number of activities from the curriculum, obtaining or constructing materials themselves, and using them in demonstrations rather than hands-on exercises. However, this approach eliminates the benefits of hands-on experience and open inquiry and is likely to be less effective than use of an integrated program of activities linked to the whole trunk.

Botanical and ecological examples used in *FireWorks* are specific to the geographic ranges of ponderosa pine, interior lodgepole pine, and whitebark pine—mainly the central and northern Rocky Mountains, the Intermountain region, and the eastern Cascades. The information about ponderosa pine forests also applies to the Sierra Nevada and perhaps the southern Rocky Mountains. Geographic specificity benefits students who live within the range of even one of these species because they can visit field sites to apply what they have learned and talk with professionals working in these ecosystems. Geographic specificity can be a limitation outside the range of these three pine species. However, once students understand the botanical and ecological principles of plant survival and reproduction after fire, they can apply these concepts to most temperate ecosystems. For example, teachers in south-central Montana use *FireWorks* to teach general concepts regarding fire behavior and diversity of fire regimes; then they teach specifically about fire history and adaptations to fire in plains grasslands, the dominant ecosystem in that area.

Conclusions

Wandersee and Schussler (2001) refer to “plant blindness” in our culture—the inability to see or notice the plants in one’s own environment, which limits understanding of the importance of plants and their habitat. They suggest several ways to reduce plant blindness, including early and interactive education in plant science. Another effective strategy may be to integrate plant science with other sciences in an inquiry-based learning program. *FireWorks* provides an example of such a program, centered around a topic that most people find both fascinating and challenging in its practical application—wildland fire. We hope that educators can use some of the teaching strategies and learning activities in *FireWorks* to increase understanding of plant science and ecology in general, and wildland fire science in particular.

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More Information About *FireWorks*

The *FireWorks* curriculum is available on the Internet at www.fs.fed.us/rm/pubs/rmrs_gtr65.pdf. Printed copies can be ordered, free of charge, from rschneider/rmrs@fs.fed.us; request Gen. Tech. Rep. RMRS-GTR-65. Items in the *FireWorks* trunk are listed in the curriculum, pp. 247-257; individual items are described briefly on pp. 258-269. More information on particular activities, and a CD-ROM containing electronic files for many activities, are available from Jane Kapler Smith (jsmith09@fs.fed.us) or Nancy E. McMurray (nmcmurray@fs.fed.us).

Questions and suggestions for incorporation of *FireWorks* into introductory-level college science courses should be addressed to Garon C. Smith (garons@selway.umt.edu).

For information on locations of *FireWorks* trunks available for loan, visit the Fire Science Laboratory's Web site, www.firelab.org. Click on "FireWorks," then "Trunk Locations." The same Web site provides information on teacher workshops; click on "FireWorks," then "Workshops."

News from the Society Annual Reports

PRESIDENT'S REPORT, 2000-2001.

Items of major import:

The Society conducted its own first meeting successfully at Portland in 2000, thanks to the efforts and skill of Wayne Elisens, Meetings Coordinator

A Meetings Manager was hired in the Business Office, Ms. Johanne Stogran. Organization and duties of Business Office personnel have been evaluated and assigned. A Personnel Committee was established to provide oversight.

An *ad hoc* Committee was established to evaluate issues relating to membership, dues structure, resulting in a proposal to be presented for a tiered membership dues structure. (See later for details)

A Strategic Plan, initiated earlier, has been revised and will be considered at this meeting in order to establish priorities and an Action Plan.

Specific items: Letters

- Official letter of thanks to former Committee chairs and members
- Formal appointment of new committee chairs, members
- To ASPP objecting to name change; letters to several botanists urging them to write also
- Fall letter in PSB
- Appreciation for Leisman Bequest
- Proposing name change of Past President's Symposium to Plenary Symposium
- Thank you to Mary Dawson for site visit and report
- Congratulations to Peter Raven on Presidential Medal
- Letter about Corporate Sponsorship Package
- Appointing Dieter Wilkin Chair, Pacific Section
- Raven and Evert dealing with their concerns about McGraw Hill sponsorship
- Thanks to McGraw Hill for support
- Spring President's letter in PSB
- Formal invitation to E. O. Wilson to be Plenary Speaker, 2003
- Karlign Award Congratulations letters

- Letter to Rieseberg about Symposium
- Invited Marlene Dickison to meeting
- Letters of invitation to other societies for 2002 meeting in Wisconsin
- Winter email to society members
- Email to Council about proposed change in member rates, page charges

Assisted with developing job description for Meetings Manager

Worked on having BSA endorse letter about endangered species applying to plants

Corresponded with IBOY, resulting in announcing it on website

Discussion with President of ASPB about joint projects; nothing specific established. Pursue this

Appointed *ad hoc* Membership Tiers Committee; informed Council of outcome of their deliberations after Spring EC meeting; presented proposed changes to membership in the spring mailing; will bring proposed changes to a vote at the 2001 BSA Business meeting.

Appointed an *ad hoc* committee to work out a MOU for interaction between BSA and AABGA

Provided information and guidance on various committee functions to committee chairs

Personnel Issues

Received Dawson Report,
Established Personnel Committee to provide oversight of Business Office and implemented several additional suggestions from Dawson Report

Evaluated organization of Business Office
Established search committee, interviewed (with Schneider, Osborn, Hiser) and hired Meetings Manager, March 2001

With EC input, offered recommendations about organization and established duties of Business and Meetings Managers, spring 2001

Completed Performance Review, in conjunction with Personnel Committee of both Kim and Johanne, July 2001

Editor-in Chief, AJB

Dealt with issues regarding special papers
Discussed with Editor the Special Paper Policy, but have not resolved this by a written statement

Completed revision of Editorial Board Policy, conveyed to Editor in Chief

Meetings attended:

AIBS Council meeting in October, 2000; the initiative to increase staff working on Public Policy, using funds committed from member societies is most important issue for BSA to consider
CSSP in December, 2000; discussion of election outcome included consideration of how to maintain increasing, or even, current funding levels by Congress; concern about teaching evolution and some of the antievolution movements was presented, ideas of how to publicize scientific research presented.

AIBS as Council Representative, Board Member in March 2001

Bylaws change about K-12 teachers receiving a special member rate was written, distributed in spring mailing, and passed by member vote.

Drafted President's Forum Discussion Session for Botany 2001, invited NSF officers to attend, Presidents of other attending societies at Botany 2001, established agenda

Strategic planning

Revised strategic plan, discussed at spring EC

Proposed and organized strategic planning/action session, interviewed and hired David Northington as facilitator, for August 2001. Established session agenda.

Altered strategic plan into a "wish list" for FAC to use as fund raising

Respectfully submitted,

Patricia G. Gensel, *President*,

REPORT OF PAST PRESIDENT

Committee on Corresponding Members

As chair of this committee I solicited nominations for one Corresponding Member. Materials were received and distributed to the EC and to other Committee members. Stefan Vogel was proposed for membership.

Elections Committee

As chair I worked with the committee members to provide candidates for President and Treasurer. Ed Schneider and Scott Russell were the nominees for President-Elect and Joe

Armstrong and Carl Taylor for Treasurer. Scott Russell is President-Elect and Joe Armstrong the new Treasurer.

Plenary Symposium

The title of the symposium is: "Comparative and functional genomics: evolutionary implications." I decided on the theme of "genomics" for the Plenary Symposium because of the rapid development of this area of research.

This symposium will explore the rapidly developing impact of genomics research on evolutionary biology. It seemed a timely topic in that the growth of this field presents exciting research opportunities to botanists in diverse disciplines. Speakers are: JONATHAN WENDEL, TOM OSBORN, FRANK ROSENZWEIG, CHRIS SOMERVILLE, VIRGINIA WALBOT.

Young Botanist Awards

Nominations for these awards were solicited and the supporting materials reviewed and considered—23 awards were given this year (see *Plant Science Bulletin* 47(2):49.

Doug Soltis, *Past-President*

Secretary's Annual Report, 2001

This was a transitional year for the office of Secretary, with Pam Soltis retiring and myself, Jennifer Richards, assuming responsibilities. Pam completed her term by serving as the Society's Secretary at the BSA Annual Meeting in Portland, OR, filing the award winners' names from the 2000 BSA Annual Meeting with *PSB* Editor Marsh Sundberg, preparing the minutes of the 2000 Business Meeting for the Fall BSA mailing, and orienting me to the duties of the Secretary.

I attended, took notes, and filed minutes from the summer Executive Committee meeting in Portland, OR, and the winter Executive Committee meeting in Columbus, OH. I also attended the BSA Council meeting at the 2000 Annual meeting and filed the minutes for this meeting. I participated in the on-going Executive Committee discussions and decisions on BSA business, which occur via e-mail throughout the year. I also responded to inquiries and correspondence directed to the BSA Secretary.

With the help of Webmaster Scott Russell, I collected the annual reports of the Executive Committee, the BSA Council members, and the Committee Chairs, compiled the reports, and posted them on the BSA webpage. I helped President Pat Gensel and President-elect Judy Jernstedt plan the agendas for the 2001 BSA Council and Business Meetings and the agenda for the BSA Banquet, as well as the

agendas for the pre- and post-meeting Executive Committee meetings.

Respectfully submitted,
Jennifer H. Richards, *Secretary*,

TREASURER'S REPORT

October 1, 2000 through June 30, 2001

Major Actions Completed:

The financial position of The Botanical Society of America remains strong. The BSA Endowment Fund assets, invested through Salomon Smith Barney (SSB) as of June 30, 2001 include:

Managed Funds	\$1,683,433.76
Select Funds	<u>\$ 318,116.37</u>
Total	\$ 2,001,550.15

Cash assets held at Santa Barbara Bank and Trust as of June 30, 2001 include:

Non-Profit Checking Account	\$ 23,465.61
Business Savings	<u>\$ 102,252.59</u>
Total	\$ 125,718.20

A current and detailed Financial Statement will be distributed at the Executive Council & Business meetings

Close cooperation continues among the BSA Business Office in Columbus, Ohio, Mary Dawson, the BSA Certified Public Accountant, and the Treasurer's Office. Approximately 150 checks for routine bills and awards were distributed from the Treasurer's Office. Most requests for checks utilized the Electronic Check Request available at the following site:

<http://www.botany.org/bsa/membership/reimburs.html>

Quarterly reports to the BSA Council, section, and special fund chairs/officers continue to be posted electronically. The BSA financial statements can be accessed at <http://admin.botany.org/budget> The financial statements for section and special fund accounts are updated on a bimonthly basis. Sectional cash accounts have continued to be awarded 2% per quarter; 8% per annum with balances of \$1,000. Special Funds with a balance of \$2,500 have been earning the equivalent rate as the Soloman Smith Barney BSA Mutual Fund investments. Rates for the first three quarters of FY 2000-01 have been 1.4%, -7.8%, and 7.9% % for a fiscal year YTD 1.5% return.

The BSA received the final distribution from the estate of Richard and Deana Klein, longtime

members of the BSA in the amount of \$32, 596.42. The Klein fund which now totals \$232,596.42 has been placed in the SSB fund and the Financial Advisory Committee will determine the appropriate investment vehicle for long term growth & security.

The development of a Job Description for the new full time BSA office staff member (Title: Meetings Manager) was coordinated by the Kim Hiser & the Treasurer's office and submitted to Ohio State University for processing. Several candidates were interviewed during the spring meeting of the Executive Council held at OSU. Johanne Strogan was selected as the most qualified applicant and began full-time employment in April, 2001.

The annual performance evaluation of the Business Manager, Kim Hiser, and the Meetings Manager, Johanne Strogan, was completed by the Personnel Committee, consisting of the President, President-elect, Treasurer, and Meeting Coordinator.

MasterCards under the Botanical Society of America name are now held by the Business Manager, Meetings manager, and the BSA Treasurer. These have a \$5,000 allowance and are used primarily to reduce the number of checks that need to be written and speed up payment times on BSA purchases.

- All members were encouraged to submit budget ideas during the annual call for budget requests made in June/July of each year. Last year \$27,841.00 of special Initiative/project money was made available from interest earned from the BSA Endowment Fund. These funds provided support for the following:

Additional AJB signature	(\$10,000)
Karling awards	(\$ 5,000)
Education Committee	(\$ 7,000)
Operational Audit	(\$ 4,500)

Recommend Actions for FY 2001 2002

1) The new BSA Treasurer will be Dr. Joe Armstrong who will assume the duties for the new fiscal year 2001-02. I recommend that Dr. Armstrong visit Santa Barbara, review existing procedures, transfer files, and meet with the BSA CPA, Mary Dawson to ensure a smooth transition.

2) I recommend that The Society follow through with the recommendations from the 'operational review/audit' of the Business Office as outlined in the proposal from Mary Dawson, Certified Public Accountant dated December 18, 2000. These recommendations included changes to the following: Establishment of a Personnel Committee

to supervise BSA Office staff, Payroll for Office Staff be moved to the Treasurer's account, improved vacation/sick time tracking, improved membership processing, accounting software update, division of duties with hiring of second BSA Office staff member, review bond coverage, establishing accounts for annual meetings

3) Recommend that Special Initiative dollars for FY 2001-02 be sequestered until following the Strategic Planning session scheduled for August 16th in order to correlate priorities of Society with available financial resources.

2001 Annual Report: BSA Meeting Coordinator

General Issues

Duty transition to BSA Meetings Manager

— Commencing in March 2001, Meeting Coordination responsibilities began a gradual transition to Ms. Johanne Strogan, the BSA Meetings Manager, in the BSA Business Office. I cease my activities as the Meeting Coordinator after the Botany 2001 conference. In May 2001, Johanne visited Scott Russell and myself at the University of Oklahoma campus for a two-day, in-depth tutorial on meetings management and web-related activities. The transfer of responsibilities to the Meeting Manager should be complete by the end of the 2001 conference.

Contract negotiations and professional assistance

— Conferon, Inc. continues to serve as our professional meetings management partners for the 2001, 2003, and 2004 meetings. The Botany 2002 conference will utilize the UW-Madison conference services to manage the meeting instead of Conferon. Ed Suddath, executive director of the National Association of Catering Executives, continues to serve as the BSA consultant for contract review.

Role of the Meeting Coordinating Committee

— The MC committee served a limited role in coordinating meeting activities. Most consultation about meeting activities were undertaken with direct consultation with Johanne Strogan, Jeff Osborn, the EC, and Carol Baskin.

Botany 2000 Meeting

Account review and summary

— Review of invoices, itemized accounts, refunds, and miscellaneous record keeping are intensive activities during the weeks immediately following a conference. Account review was complicated because it involved Conferon and myself for invoice review and authorization, and payment executed through the business office and treasurer. Because

it was necessary to outsource activities such as publication preparation and exhibition oversight, and because of the cost associated with printing and mailing the AJB abstract supplement, expenses exceeded revenue for the Botany 2000 conference. A compounding factor was that the number of paid registrants fell short of predictions by more than 20%. There were 890 total registrants for Botany 2000 of which 805 paid registration fees.

Analyses of costs and how accounts were managed indicated changes were warranted in the way we undertook invoice review and payment as well as how we arranged for conference printing (particularly the AJB abstract volume), exhibition oversight, publication preparation, and mailing expenses. Appropriate changes were implemented during Botany 2001 planning to reduce meeting staging expenses and to make account management more efficient..

Botany 2001 Meeting

Site Planning visit — A planning visit to Albuquerque was undertaken from September 30 to October 2, 2000. Meetings with all local society representatives, the fieldtrip coordinator, Conferon account planner, and local service providers were conducted. This meeting was critical for the success of the conference, especially since major problems were detected after visits to the Hyatt Regency and the Albuquerque CC.

Meeting Personnel — Important meeting personnel for Botany 2001 are Diane Marshall (BSA local rep), Tim Lowrey (ASPT and IOPB local rep), Kelly Allred (Fieldtrip Coordinator and ABLS local rep), and Sid Ash (AFS and BSA Paleo local rep). Caroline Spinner is the Conferon account planner; Jim Goodman is the Conferon account manager.

Conference logistics — Contracts are signed with the Hyatt Regency as the host hotel, and with the Plaza Inn, Hotel Blue, and Doubletree as overflow hotels. Only the Doubletree has some attrition vulnerability. The Albuquerque Convention Center (ACC) contract was amended twice to achieve the best possible room situation. Other major contracts were negotiated and signed with Conferon as the registration provider, Tour New Mexico as the destination management company (transportation), Conference Services of the Southwest for conference decoration and exhibition, VAE for audio-visual support, and other agencies for printing services, giveaways, security, etc. J o h a n n e Stogran, BSA Meeting Manager, coordinated the exhibition hall, food & beverage functions, student projectionists, publication assembly and printing, and various other components of the meeting. Jeff Osborn, BSA Program Director, oversaw

compilation and layout for the Botany 2001 Program. Caroline Spinner of Conferon oversaw RFP generation and collation for most contracts as well as preparation of the meeting coordination document, the conference agenda, which details ALL logistical details for the conference. Jim Goodman of Conferon handles sales-related items such as contract development, which are reviewed by the Conferon legal department. I served as general coordinator for the meeting, reviewed and negotiated most contracts, prepared the budget, and acted as the primary liaison between the conference activities, Conferon, and our consultant. A detailed review of the Botany 2001 budget and status report was presented at the spring EC meeting in March 2001.

Botany 2002 Meeting

August 2-7; University of Wisconsin at Madison, Pyle and Lowell Conference Centers.

Meeting with AFS, ASPT, BSA, CBA/ABC, and PSA.

Conference logistics — Meeting management for Botany 2002 will be undertaken by the BSA Meeting Manager and UW-Madison conference services. Conferon was utilized only to secure two overflow hotel contracts at the Howard Johnson Plaza and Madison Inn. The meeting will be staged on the UW campus, in two campus conference centers, and in campus dorms and hotels. The expanded meeting format is facilitated by the reduced staging expenses by using a campus facility.

Meeting Personnel — Most society local reps are designated and include Ray Evert (BSA), Paul Berry (ASPT), Linda Graham (PSA), and Jean Gerrath (CBA). The Meeting Manager and Program Director will oversee coordination of the meeting logistics and program, respectively, which will make most duties of the Meeting Coordinator obsolete.

Special considerations — Because UW meeting space has no rental fees, there is the potential for considerable cost savings for Botany 2002. It is anticipated that utilization of UW conference services also may effect cost savings. These savings coupled with reduced housing expenses should result in a conference that costs less to stage and to attend. There are special problems with a campus venue. There are limited options for exhibitors and there are often logistical problems on a campus because buildings are under different management.

Botany 2003 Meeting

July 27-31; Mobile, AL; Mobile Convention Center and Adam's Mark Hotel

Meeting with ABLs, AFS, ASPT, BSA

Conference Logistics - Working with Conferon, contracts are in place with the Mobile Convention Center and the Adams Mark Hotel as the host hotel. Rates at the Adams Mark are \$99 sgl/dbl. Contracts with two overflow hotels are still under negotiation as well as for some dormitory space at the University of South Alabama. There will be a tiered housing option for attendees. The MCC is a modern facility, is adjacent to the revitalized downtown, and has a scenic placement by the Mobile riverfront. We have a commitment from E. O. Wilson to serve as our Plenary Speaker. Local society reps and the fieldtrip coordinator are available from Alabama and Mississippi. Because of the abundance of wetlands and aquatic and marine habitats, a tentative theme is 'aquatic and wetland plants'.

Special considerations — There are many opportunities for fieldtrips to interesting sites on the Gulf coastal plain and to marine and aquatic habitats. Two botanic gardens are in Mobile and environs and there is an adequate group of active, retired, and amateur botanists/horticulturalists. Local reps are limited at the Univ. of South Alabama and will be recruited throughout the region. Because of the hot and humid venue, extra effort will be required to 'market' the meeting starting at the Madison meeting. Recruitment of additional societies to meet with the core botanical societies is underway.

Botany 2004 Meeting *Contract Pending*

August 1-5; Snowbird Resort, south of Salt Lake City, UT. Meeting with: societies TBD

Site selection — Sites for the 2004 meeting were examined in St. Paul, MN, Reno, NV, and Salt Lake City, UT and environs. Although an excellent venue for our group, costs in St. Paul were prohibitive for our group. Formal bids were solicited from two venues in Reno and three venues in the Salt Lake City area. Jeff Osborn and I conducted a 'fam' (= familiarization) visit to Salt Lake City and Snowbird, whereas I had conducted site visits previously to Reno (with Judy Verbeke) and to St. Paul (with Carol Baskin). Based on negotiated rates and other considerations, Jeff Osborn, Johanne Stogran, and I recommended that we go to contract with Snowbird Resort.

Conference logistics — Air travel to SLC is facile, because Delta has a hub in SLC. Shuttle service to the resort is an extra expense and entails 30-45 minutes of extra travel time. The University of Utah, BYU, Utah State University, and Weber State

have an adequate supply of local society reps and a fieldtrip coordinator. There are many options for fieldtrips in the Intermountain and Rocky Mountain region.

Snowbird resort has excellent meeting facilities and will be able to stage professionally our full conference and exhibition. Negotiated hotel rates are \$105 sgl/dbl at the Lodge, \$115 sgl/dbl at the Cliff Lodge (top of the line lodge), and \$125 for condos that sleep 4-6 with kitchenettes.

Special considerations — The retreat type setting in the Rocky Mountains and Intermountain region was viewed as an interesting site for the 2004 meeting.

Botany 2005 Meeting *Venue to be determined; dates open; societies open*

REVIEW OF MEETING COORDINATION ISSUES

1. Position of 'Meeting Coordinator'
Acquisition of the BSA 'Meeting Manager' makes the position of 'Meeting Coordinator' redundant. With a slight increase in the duties of the Program Director, the position of the Meeting Coordinator could be eliminated.

Recommendation — Eliminate the position of Meeting Coordinator by amending the by-laws.

2. Status of 'Meeting Coordinating Committee'
Based on experience for two meetings, a small committee is optimal for conferring on meeting-related issues and for forwarding recommendations. In addition to the Meeting Manager and Program Director, it may be best to have only one other knowledgeable individual on the committee to make it responsive and cohesive.

Wayne Elisens, MeetingCoordinator



PROGRAM DIRECTOR

General Planning for Botany 2001

I served on the Meeting Planning Committee and assisted the BSA Meetings Coordinator, Wayne Elisens, and BSA Meeting Manager, Johanne Stogran, with an array of planning issues.

Planning Visit for Botany 2001

In October 2000, I attended a planning visit at the site of the Botany 2001 conference in Albuquerque, New Mexico. The meeting was very useful for planning Society functions, viewing potential meeting sites, and for meeting with the BSA Local Representative, Diane Marshall, as well as with the program chairs and local representatives from other participating societies. We visited the Albuquerque Convention Center, the host hotel (Hyatt), and a variety of local botanical and scientific sites. The site visit was coordinated by the BSA Meetings Coordinator, Wayne Elisens.

COORDINATION OF THE SCIENTIFIC PROGRAM FOR BOTANY 2001

COMMUNICATION WITH PROGRAM CHAIRS AND SYMPOSIUM ORGANIZERS. The BSA Program Director coordinates the scientific program with the help of the sectional/participating society Program Chairs. The symposium organizers plan the sequence of presentations within their own symposia and then forward the symposia programs to the sponsoring sections for scheduling. To coordinate these activities, the sectional/society Program Chairs and the symposium organizers were sent several mailings and e-mail updates that provided detailed instructions and a timeline for preparation and submission of their programs.

CALL FOR SYMPOSIA. The "Call for Symposia" for Botany 2001 was distributed in the BSA-wide Spring 2000 mailing and posted on the Botany 2001 website. The deadline for submissions was July 1, 2000, but was extended to September 15, 2000. Proposals were submitted on-line using the electronic submission form. Symposium proposals were forwarded to sectional officials for approval of sponsorship.

CALL FOR PAPERS. The "Call for Papers" for Botany 2001 was distributed in the BSA-wide Fall 2000 mailing and posted on the Botany 2001 website. The "Call" was also sent to the Program Chairs of participating societies for their use. The deadline for submissions of abstracts was March 9, 2001, more than one week later than in previous

years. Although submission of hardcopy abstracts was possible, on-line submission was strongly encouraged.

ELECTRONIC SUBMISSION OF ABSTRACTS. The electronic submission process worked very well again in 2001 (the third time it had been used for an annual meeting), and all abstract submissions for Botany 2001 were made on-line. All abstracts and other relevant information (keywords, author names and affiliations, titles, potential conflicts with other presentations, etc.) were archived in separate electronic databases that the Program Chairs could access and download to construct their programs. The BSA Webmaster, Scott Russell, developed and organized the electronic site, and he made significant improvements to site for 2001.

ABSTRACT VOLUME. The abstracts for Botany 2001 will be printed in a separate volume and included in the registration binder along with the final Program, which will be distributed on-site at the conference. I coordinated the design and layout work for the volume, as well as the proofing. There will be 674 abstracts published in the volume; however, these do not represent all conference presentations (see 'Summary Information' below).

FINAL PROGRAM. The deadline for submission of sectional/participating society programs was early April 2001. The Program Chairs deserve much credit for organizing and submitting their programs. The sectional/society programs, as well as all BSA-wide and conference-wide functions were organized into a comprehensive, conference-wide format. Session information was then submitted to the BSA Meetings Coordinator, Wayne Elisens, for room assignments. I then coordinated the design and layout work for the final Program.

NEWS COVERAGE. The news divisions of three national periodicals, *Science* magazine, *The Scientist*, and *Science News* were contacted with information about Botany 2001 and an inquiry about obtaining news coverage. A press release about Botany 2001 was also prepared for distribution to local and regional news outlets.

The Scientific Program for Botany 2001

SUMMARY INFORMATION. All BSA disciplinary Sections have some function(s) scheduled at Botany 2001 except for the Mycological and Tropical Biology Sections. However, the Tropical Biology Section is a co-sponsor of the new conference-wide Discussion Sessions. Detailed schedules for the sectional programs are presented in the final Program, and summary information for the number

of presentations and sessions for the entire conference is presented below.

Total number of presentations	707
Talks	547
Contributed papers	461
Symposium presentations	82
Special lectures and addresses	4
Posters	155
Regular submissions	126
Recent Topics	30
Discussion Sessions	5
Total number of sessions	57
Contributed papers	45
Symposia / Colloquia	11
Posters	1
Discussion Sessions	5

NEW AND NOTEWORTHY PROGRAM COMPONENTS.

As Botany 2001 is the second annual meeting in many years that the BSA has completely organized, many planning aspects were new or only tried for the second time.

Program organization. Like last year, rather than each participating society having separate listings in the final Program with different session numbers that are variously cross-referenced, the scientific program for the entire meeting in chronologically listed with conference-wide session numbers. The days of the week are clearly indicated by vertical tabs on the page edges. In addition, components of the scientific program are presented in several 'At-a-Glance' sections. The intent of these changes is to make the scientific program more cohesive for the conference as a whole and to make the final Program a more user-friendly document.

Recent Topics posters. A new poster session was introduced last year with an extended abstract submission deadline. 'Recent Topics' is designed to accommodate research results that may not have reached fruition by the March deadline. Abstracts were accepted on a first-come, first-served basis until all available poster slots (50) were filled, or by an absolute deadline of July 20, 2001. Thirty posters were submitted and, of these, only six presenters already had another presentation(s) scheduled for the meeting.

Single, conference-wide poster session. A single, conference-wide poster session was included into the scientific program, with sectional posters grouped together. The intent was to schedule the poster session at a time when no other conflicting paper or symposium sessions would be scheduled.

Discussion Sessions. In addition to encouraging the sectional/societal program chairs to directly incorporate more discussion into their sessions, several independent Discussion Sessions have been included in the program. These new Sessions are based in part on Bruce Kirchoff's successful "Open Space" symposium that was a component of the Developmental and Structural Section's program last year. The goal for Botany 2001 is to translate this into a conference-wide format that is well-incorporated into the overall scientific program. A "Call for Discussion Session Topics" was distributed to all BSA members in the spring 2001 mailing and was posted on the websites. The deadline for topics was June 15, 2001. Four contributed Discussion Session topics were submitted, and these are timely, interesting, and have broad appeal. In addition to the contributed sessions, there will be a lead-off Session titled "Presidents' Forum: federal funding for botanical research," which will be a panel format with Society representatives and NSF Program Officers. All five Discussion Sessions are scheduled for Tuesday and Wednesday afternoons. The Discussion Sessions are being sponsored in part by the BSA Developmental and Structural and Tropical Biology Sections, and this sponsorship helps defray the costs for the coffee.

Future Annual Meetings

2002—MADISON, WISCONSIN. Botany 2002 will be held from August 3-7, 2002 in Madison, Wisconsin. In addition to the BSA, other societies participating in the conference will include the: American Fern Society (AFS), American Society of Plant Taxonomists (ASPT), Canadian Botanical Association (CBA), and Phycological Society of America (PSA). The International Association of Wood Anatomists (IAWA) may also sponsor some sessions. Potential themes for the conference are "Botany in the Curriculum" and "Integrating Botanical Research and Teaching."

Calls. The "Call for Symposia," "Call for Workshops," and "Call for Field Trips" for the 2002 Annual Meeting were distributed in the BSA-wide Spring 2001 mailing and posted on the Botany 2002 website. Copies of these "Calls" were also sent to the Program Chairs of participating societies. Deadlines for submissions of on-line proposals are as follows: Symposia (July 15, 2001 for the Paleobotanical and Systematics Sections, and September 15, 2001 for all other Sections); Workshops and Field Trips: (October 15, 2001). The "Call for Papers" will be distributed in the BSA-wide Fall 2001 mailing, as well as posted on the website.

New Meeting Component - Expanded Format. The expanded format will include a separate meeting that focuses on educational and outreach issues on Friday and Saturday, August 1-2, but that is linked to the annual scientific meeting on Sunday, August 3, via workshops and field trips. A Planning Committee, which includes representatives from all participating societies and the Education Committee, is working on the program and will meet in person at Botany 2001 in Albuquerque. A tentative schedule is listed below, and the membership will hear much more about the expanded meeting format in the coming Fall and Spring mailings and in the *Plant Science Bulletin*.

Friday afternoon/evening will include registration, an opening speaker, and some type of reception. An opening (i.e., working) session may be included as well.

The primary sessions will occur all day on Saturday. These will not be contributed talks, etc., but exclusively breakouts, panel discussions, etc. focusing on a range of themes. Contributed posters from attendees may be included on Saturday. If the authors choose to stay for the regular conference as well, the posters could also be presented as part of the program there. Saturday night will be a public outreach speaker (free and open to the Madison-area public).

Sunday will include a broad range of hands-on workshops. These will be the primary interface with the regular conference. More education-oriented workshops will be solicited and included than have occurred in the recent past. A variety of half-day and full-day workshops will be desired so people could attend more than one workshop if they choose, and/or participate in field trips, which will occur on Sunday as well.

2003—MOBILE, ALABAMA. Botany 2003 will be held from July 26-31, 2003 in Mobile, Alabama. Programmatic planning for Botany 2003 has not yet begun in any significant way. However, E. O. Wilson has accepted an invitation to deliver the Plenary Address, and a

potential theme has been identified (“Aquatic and Wetland Plants”).

2004. Along with the BSA Meetings Coordinator, Wayne Elisens, I attended a “familiarization” visit to the Salt Lake City area. The visit was organized by the Salt Lake City Convention and Visitor’s Bureau and was designed to provide meeting planners with the opportunity to have on-site visits to potential conference sites. The “fam” visit was very informative and useful. The mountain resort area of Snowbird, which is ca. 30-45 minutes from Salt Lake City, was a very appropriate venue for our conference, and Wayne Elisens has been negotiating with Snowbird and Reno, Nevada as potential sites for hosting the Botany 2004 conference.

Respectfully submitted,
Jeffrey M. Osborn, *Program Director*

The American Journal of Botany
August 1st 2000 – July 31st 2001 Annual Report

1. Publication status

Year	MS Received	Total Pages	Papers
2000 – 2001	347	2,184¹	224²
1999 – 2000	325	1,804	189
1998 – 1999	301	1,820	181
1997 – 1998	325	1,802	212
1996 – 1997	323	1,728	181
1995 – 1996	325	1,618	176

¹ On average, 182 pages per issue; 18.7 papers et al. per issue; 9.8 pages per paper (steady increase in the length of papers, e.g., 9.5 pages per paper in 1999 – 2000).

² 208 research articles; 7 brief communications; 8 special papers; 1 book review.

2. Current manuscript status

Accepted or at *Allen Press*
Out for Review

			Total
2000–2001	147	45	192³
1999 – 2000	166	47	213
1998 – 1999	113	73	186
1997 – 1998	105	68	173
1996 – 1997	92	42	134
1995 – 1996	95	46	141

³ Excluding ‘split decision’ manuscripts out for revision or 3rd review.

**Updated Positions Available Listings
At BSA Website**

Current position announcements are maintained on the Botanical Society’s website Announcement page at URL <http://announce.botany.org/>. Please check that location for announcements that have appeared since this issue of *Plant Science Bulletin* went to press. To post an announcement, contact the webmaster: <bsa-webmaster@botany.org>.

3. Current production schedule

- Receipt to final editorial decision:
 - excluding split reviews
 - including split reviews;
- Receipt to publication

2000–2001	1.1	3.5 ⁴	7.4 ⁵
1999 – 2000	1.2	7.4	8.3
1998 – 1999	1.1	6.9	7.7
1997 – 1998	1.0	6.7	7.5
1996 – 1997	1.1	6.0	6.0
1995 – 1996	1.0	6.0	6.0

⁴ ~17% of all manuscripts received a ‘split decision’; 54% of all of these manuscripts were accepted; rejection rate for all manuscripts, on average, was ~ 44%.

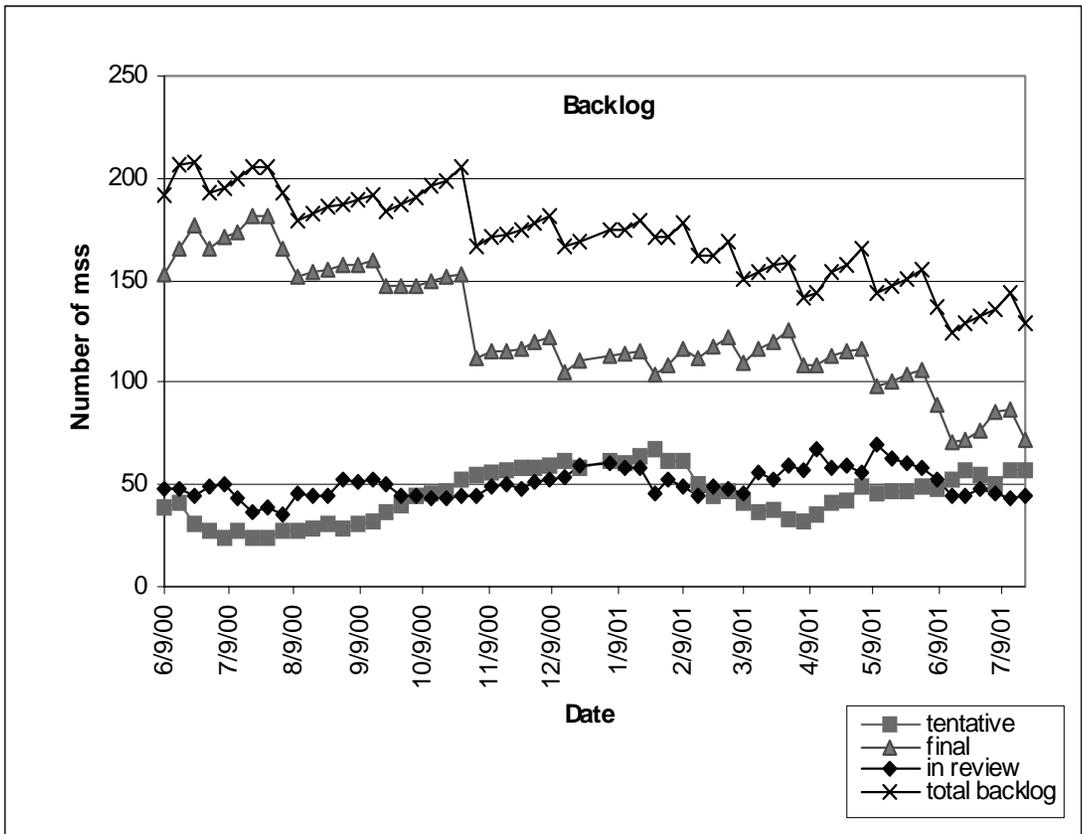
⁵ Receipt of final manuscript to appearance in print. Time from submission to appearance in print ~ 9.3 months due to delay of authors providing revised manuscripts for 3rd review or final manuscripts after successful first round of reviews. The time to appearance in print is governed by the number of manuscripts published per issue not by the efficiency of journal staff.

4. Highlights: Backlog of manuscripts reduced by ~35% since the adoption of larger issue-size. Turn-

around time from receipt of final manuscripts to appearance in print reduced by ~5% (compared to August 1999 – July 2000). Time from receipt of new manuscripts to editorial decision reduced, on average, by ~ 1 week. Number of ‘split decision’ manuscripts reduced by ~13%. To conserve pagination for new research articles, Special Papers and book reviews have not been actively solicited, although we continue to look for excellent SP and will publish reviews of highly significant new books. Two new copy-editors hired at the junior level have increased efficiency at little or no additional cost. Citation Index ranking of the *AJB* steadily increasing. *AJB* has been mentioned in *Science* and *Science News*.

Recommendations: Request for staff annual salary increments and additional copy-editor (to be hired at junior level). Reduce institutional and individual subscription rates in developing countries (as defined by *NATO*). Raise an endowment for the *AJB* (add item to membership/subscription form). Increase advertising in the *e-AJB*. Appoint *AJB* editor-in-chief as a non-voting member of the *BSA* Executive Committee.

Respectfully submitted,
 Karl J. Niklas
 Editor-in-Chief, *AJB* (kjn2 @ cornell.edu)



Volume 46

1. Four issues, 136 pages, were published on schedule. The average size since the current format was adopted (excluding the transitional year when Editor Lane submitted an early resignation) is 132 pages. It is distributed quarterly, packaged with the *American Journal of Botany*.

2. Feature articles included:

- Growing an Undergraduate Botany and Plant Pathology Program 46(1)
- Hunt Institute for Botanical Documentation: A Center for Science and History 46(2)
- The Bernhardt Top Ten; Hershey's Top Ten 46(3)
- The Evolving Debate 46(4)

3. 135 books, CD's and Videos were received for review; 44 reviews were published.

4. Both PDF and HTML electronic versions are posted on the BSA web page.

Volume 47

1. Two issues, 84 pages, have been published on schedule. The fall issue is in preparation.

2. Feature articles included:

- Toward a Theory of Plant Blindness 47(1)
- Ethics in Science: Preparing Students for their Career 47(2)

Upcoming articles will be on "The Fireworks Curriculum" and "Margaret Stone's Flowers of Louisiana"

3. 88 books and CD's have been received for review; 42 reviews were published.

Individuals interested in submitting lead articles or in suggesting future article topics should contact the editor.

Respectfully Submitted, Marsh Sundberg, *Editor, Plant Science Bulletin*.



Total page requests: Total hits: 1,040,823 hits (from March 4, 1997 through June 30, 2001).* Last year's annual report had 584,844* (from March 4, 1997 through June 30, 2000) so activity is up significantly.

Main BSA Site (www.botany.org): In June 2001, there were 37,287 page requests, with logins from 11,697 distinct hosts, 1.265 Gbytes (39.145 Mbytes/day) downloaded from the main BSA site, 81 countries, 1,846 distinct files and 147,579 individual requests. The high month for page requests was February 2001, with 50,481 page requests. The high month for distinct hosts was May 2001, with 15,201 distinct hosts, data transfers of, 1.402 Gbytes (46.342 Mbytes/day) and 201,202 individual requests. The highest number countries visiting was 85, in April 2001. Every month of 2000 (except December) and 2001 (except June) have exceeded monthly counts from the year before. The highest daily usage ever was July 28, 1997 when the site was featured as site-of-the-day by Yahoo!®, receiving 3,966 hits on that day. The second highest was March 1, 2000, with 9751 total requests and 2,402 page requests. On 28 days in May, page requests were over 1000 on just the home site alone (three Sundays did not reach 1000)!

Requests from the following 81 countries were received in June 2001 (in descending numbers of requests): Argentina, Australia, Austria, Belarus, Belgium, Bermuda, Brazil, Bulgaria, Cambodia, Canada, Chile, China, Colombia, Costa Rica, Croatia, Cuba, Cyprus, Czech Republic, Denmark, Dominican Republic, Egypt, Estonia, Finland, France, Georgia, Germany, Greece, Hong Kong, Hungary, Iceland, India, Indonesia, Iran, Ireland, Israel, Italy, Jamaica, Japan, Kenya, Kyrgyzstan, Latvia, Lebanon, Lesotho, Lithuania, Luxembourg, Malaysia, Mauritius, Mexico, Moldova, Namibia, Nepal, Netherlands, New Zealand, Norway, Pakistan, Peru, Philippines, Poland, Portugal, Puerto Rico, Romania, Russia, Saudi Arabia, Singapore, Slovakia, Slovenia, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan, Thailand, Trinidad & Tobago, Turkey, Ukraine, United Kingdom, Uruguay, Venezuela, Yugoslavia, and Zimbabwe.

A total of 144 countries outside the U.S. have been logged on the BSA website, from January 1998 to the present. Here is an alphabetical list of the countries: Albania, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, Bahamas, Bahrain, Barbados, Belarus, Belgium, Bermuda, Bhutan, Bolivia, Bosnia-Herzegovina, Botswana, Brazil, Brunei Darussalam, Bulgaria, Cambodia, Canada,

Cayman Islands, Chile, China, Cocos [Keeling] Islands, Colombia, Cook Islands, Costa Rica, Croatia, Cuba, Cyprus, Czech Republic, Denmark, Dominican Republic, Ecuador, Egypt, Estonia, Ethiopia, Faroe Islands, Fiji, Finland, Former USSR, France, Georgia, Germany, Ghana, Greece, Guam (USA), Guatemala, Guyana, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, International, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kuwait, Kyrgyzstan, Latvia, Lebanon, Lesotho, Lithuania, Luxembourg, Macau, Macedonia [Former Yugoslav Republic], Madagascar, Malaysia, Malta, Mauritius, Mexico, Micronesia, Moldavia, Moldova, Mongolia, Morocco, Namibia, Nepal, Netherlands, New Caledonia (French), New Zealand, Nicaragua, Nigeria, Niue, Norway, Oman, Pakistan, Panama, Paraguay, Peru, Philippines, Poland, Polynesia (French), Portugal, Puerto Rico, Qatar, Romania, Russia, Russian Federation, Samoa, San Marino, Saudi Arabia, Senegal, Singapore, Slovak Republic, Slovakia, Slovenia, Solomon Islands, South Africa, South Korea, Spain, Sri Lanka, Suriname, Sweden, Switzerland, Taiwan, Tanzania, Thailand, Togo, Tonga, Trinidad & Tobago, Turkey, Ukraine, United Arab Emirates, United Kingdom, Uruguay, Venezuela, Virgin Islands (USA), Yemen, Yugoslavia, Zambia, and Zimbabwe.

The following access statistics are available for the following BSA domains: BSA Main Site = <http://www.botany.org/>; BSA Images = <http://images.botany.org/>; Botany 2000 (meeting site) = <http://www.botany2000.org/>; Botany 2001 (meeting site) = <http://www.botany2001.org/>; Botany 2002 (meeting site) = <http://www.botany2002.org/>; Botany 2003 (meeting site) = <http://www.botany2003.org/>; BSA Announcements site = [\[announce.botany.org/\]\(http://announce.botany.org/\); AJB Supplemental Data site = <http://ajbsupp.botany.org/>; McIntosh Apple Development site = <http://mcintosh.botany.org/>. This was an increase from last year and included a separation of the Announcements site, AJB Supplemental Data site and the McIntosh poster site.](http://</p>
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Here is a summary chart of activity for the major domains and sub-domains. All show a strong effect of the academic year being in session. The usage figures are provided in pages downloaded and the volume of data downloaded in MB (megabytes) or GB (gigabytes). The highest usage month of a site is indicated by a hash mark (#). # = high number

BSA now runs its own web servers, domain name servers, mail service and security systems. Steve Wolf runs the BSA Directory. In addition to the time involved in running these services, there is a risk of catastrophic failure of systems due to damage to both the system and the upstream network, and increasingly hacker attacks. Constant upgrades and maintenance are needed and have to be considered as expenses in this undertaking. During the next year the task of webmaster and systems administrator will be split. Steve Wolf will be the new webmaster as of September 1 and Scott Russell will remain as systems administrator. A back-up systems administrator is in training at the University of Oklahoma to handle emergencies when Scott Russell is out-of-town (which is usually when such emergencies happen!).

Increasingly, the webmaster should be looked at as a content coordinator rather than a content generator or online secretary. As different technologies for

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Month	BSA Main Site	BSA Images	Botany 2000	Botany 2001	Announcements
July	29,659	2,567 [983 MB]	2,163 [650 MB]#	374 [4.7 MB]	1,216 [13.6 MB]
Aug	32,340	3,181 [1.22 GB]	1,639 [594 MB]	562 [8.6 MB]	1,490 [12.4 MB]
Sept	36,290	4,459 [1.486 GB]	392 [101.5 MB]	829 [12.2 MB]	1,628 [14.9 MB]
Oct	39,168	5,000 [1.881 GB]	399 [120.3 MB]	1,046 [48.0 MB]	2,848 [27.5 MB]
Nov	36,579	4,514 [1.852 GB]	421 [123.3 MB]	802 [30.391 MB]	3,063 [30.1 MB]
Dec	20,798	2,878 [1.136 GB]	274 [82.6 MB]	563 [20.635 MB]	1,988 [18.98 MB]

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Month	BSA Main Site	BSA Images	Botany 2000	Botany 2001	Announcements
Jan	44,914 [1.02 GB]	4,844 [1.91 GB]	408 [110.6 MB]	1,261 [64.072 MB]	2,984 [30.908 MB]
Feb	50,481# [1.11 GB]	4,940 [2.25 GB]	472 [299.7 MB]	2,365 [147.11 MB]	2,772 [29.717 MB]
March	42,016 [1.19 GB]	5,942# [2.53 GB]	447 [581.6 MB]	2,272 [898.62 MB]	3,294 [35.766 MB]
April	41,153 [1.26 GB]	5,518 [2.78 GB]#	309 [522.1 MB]	3,099 [469.92 MB]	3,726 [38.341 MB]
May	45,294 [1.40 GB]#	5,474 [2.06 GB]	658 [470.2 MB]	3,998# [1.64 GB]#	4,244# [47.51 MB]#
June	37,287 [1.26 GB]	3,777 [1.19 GB]	719 [377.1 MB]	3,967 [1.17 GB]	4,036 [43.643 MB]

generating web pages are employed, it should be easier to institute changes so that any interested party will be able to update or write their own web pages on to the server. Therefore, the direct involvement of the webmaster will be to supervise high order links to independently-controlled pages and overseeing their general organization and quality. Having a person with the ability to serve as a part-time web developer, providing artwork and layout for attractive (award-winning, hopefully) web projects would be highly desirable.

The web versions of documents and membership are increasingly becoming the focal set of references for the BSA. Future web use should increasingly use the web to electronically archive digital correspondence as it serves as an ideal means of disseminating information within the BSA membership and leadership and to the outside world.

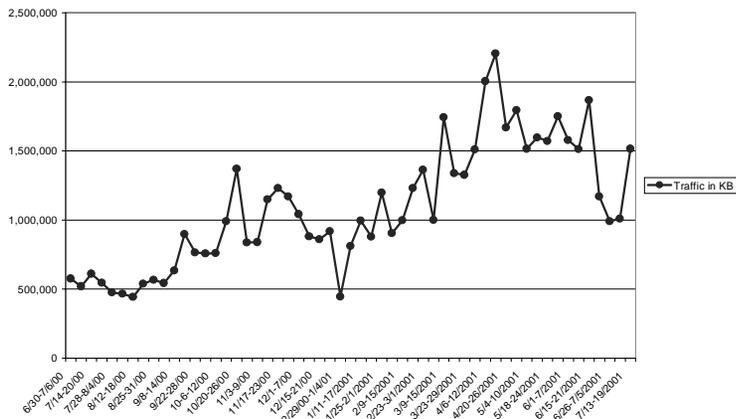
BSA Image Site: This site continues to be popular and fluctuates with the academic term. The server has provided up to 6000 pages of data in one month

with almost 3 gigabytes of data downloaded. A few negative comment in educational journal reviews have resulted in changing information accompanying use of the site. Included in this is a FAQ, pointing out how routine word processors like Word can be used to modify picture formats and correct contrast and brightness.

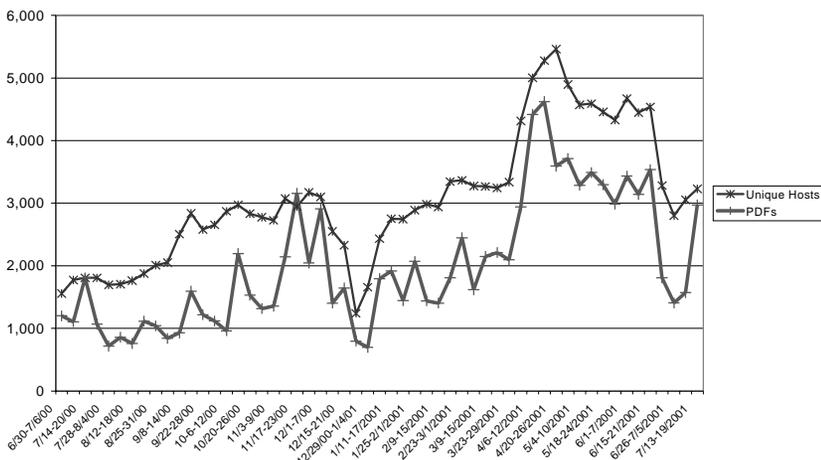
American Journal of Botany Online has now been in operation for over two years. During that time, a total of 200,000 page retrievals occurred in the last year (~7,100 per week) with a total of 32.35 Gigabytes of data downloaded (16 GB in the last ~6 months) and >58,000 PDF files (~reprints) downloaded, with 30,200 in the last ~6 months. Over the last year, growth has been approximately 100%. The following charts document the growth in usership over the last year. Unique hosts are separate distinct computer connections being made per week. PDFs are the reprint-like files downloaded per week. The lower graph illustrates the massive increase in amount of data downloaded per week.

Respectfully submitted, Scott Russell, Webmaster

Data Downloaded



Unique Hosts and PDFs



BSA Committees for 2001-2002

(as of August 1, 2001)

Standing Committees (Administrative)

1. Executive Committee:

Judy Jernstedt (2003), President
Patricia Gensel (2002), Past President
Scott Russell (2004), President-Elect
Jeffrey Osborn (2002), Program Director
Jennifer Richards (2003), Secretary
Joe Armstrong (2004), Treasurer
_____ (2004), Council Representative

2. Committee on Committees (6 appointed members; 3 year terms)

Scott Russell (2002), President-Elect,
Chair, *ex officio*
Linda Graham (2002)
Tom Ranker (2002)
Ned Friedman (2003)
Jerrold Davis (2003)
_____ (2004)
_____ (2004)
Jennifer Richards (2003), Secretary, *ex officio*

3. Financial Advisory Committee (3 appointed members; 3 year terms)

Harry T. Horner (2004), Chair
Edith Taylor (2002)
Russell Chapman (2003)
Ed Schneider (2004)
Judy Jernstedt (2002), President, *ex officio*
Joe Armstrong (2004), Treasurer, *ex officio*
Kim Hiser, Business Manager, *ex officio*

4. Annual Meeting Coordinating Committee (3 appointed members; 3 year terms) (new committee 1999)

Jeffrey Osborn (2002), Program Director,
Acting Chair, *ex officio*
Carol Baskin (2002)
Peter Hoch (2002)
Barbara Schaal (2002)
Chris Haufler (2002)
Wayne Elisens (2002), Consultant
Johanne Stogran, Meetings Manager, *ex officio*

5. Annual Meeting Program Committee

Jeffrey Osborn, Program Director, Chair
Program Organizer for each Section
Chair, Local Organizing Committee
Representatives of Other Societies
meeting with the BSA

6. Archives and History Committee (2

^t members; 5 year terms)

Ronald Stuckey (2003), Chair
Lee Kass (2004)
Pamela Soltis (2003), Immediate Past
Secretary, *ex officio*

7. Conservation Committee (6 appointed members; 3 year terms)

Tom Ranker (2004), Chair
Pati Vit (2002)
Dan Watts (2002)
Harvey Ballard (2003)
Diane Horton (2003)
Paul Wolf (2004)

8. Education Committee (6 appointed members; 3 year terms)

Rob Reinsvold (2004), Chair
David Lentz (2002)
Neil Sawyer (2003)
Stephen Scheckler (2003)
Margaret Kuchenreuter (2004)
Tom Rost (2004)
Judy Jernstedt (2002), President, *ex officio*
Jennifer Richards (2003), Secretary, *ex officio*
J. S. Shipman (2003), Secretary of the
Teaching Section, *ex officio*
Marsh Sundberg (2004), Editor, *Plant
Science Bulletin*, *ex officio*
David Kramer (2004), Immediate Past
Chair, Education Committee, *ex officio*

9. Election Committee (3 appointed members, 3 year terms)

Patricia Gensel (2002), Past President,
Chair, *ex officio*
Gerald Gastony (2002)
Barbara Crandall-Stotler (2003)
Richard Olmstead (2003)
Jennifer Richards (2004), Secretary, *ex officio*

10. Membership and Appraisal Committee (5 appointed members; 5 year terms)

Kathleen Shea (2002), Chair
Diane Marshall (2002)
Donald Hauber (2003)
Lyn Loveless (2004)
Massimo Pigiucci (2005)
Michael Mayer (2006)
Kim Hiser, Business Manager, *ex officio*

11. Publications Committee (6 appointed members; 3 year terms) (new committee, 1999)

Judy Jernstedt (2002), Chair
Pam Diggle (2002)
Darleen Demason (2002)

Jonathan Wendel (2002)
Joe Leverich (2002)
Karl Niklas, Editor, *AJB*, *ex officio*
Marshall Sundberg, Editor, *PSB*, *ex officio*
_____, Webmaster, *ex officio*
Kim Hiser, Business Manager, *ex officio*

12. Webpage Committee (5 appointed members; 3 year terms) (new committee, 1999)

_____, Webmaster and
Chair, *ex officio*

Ross Koning (2002)
Steven J. Wolf (2002)
Jim Reveal (2003)
Scott Russell (2004)

_____, (2004)
Rob Reinsvold (2002), Education
Committee Chair, *ex officio*
Marsh Sundberg, Editor, *PSB*, *ex officio*
Karl Niklas, Editor, *AJB*, *ex officio*
Jennifer Richards (2003), Secretary, *ex officio*
Kim Hiser, Business Manager, *ex officio*

6. Moseley Award (3 appointed members; 3 year terms)

Bill Stein (2002), Chair
Kathleen Pigg (2003)
Cindi Jones (2004)

7. Pelton Award (3 appointed members; 3 year terms)

Scott Russell (2002), Chair
Elliot Meyerowitz (2003)
Darlene Southworth (2004)

Ad Hoc Committee

1. Membership Tiers Committee

Scott Russell, Chair
Kathleen Shea
Edith Taylor
Maxine Watson
Ed Schneider, Treasurer, *ex officio*
Kim Hiser, Business Manager, *ex officio*

Standing Committees (Awards and Prizes)

1. Corresponding Members (Past Presidents; 3 year terms)

Patricia Gensel (2004), *ex officio*
Douglas Soltis (2003), *ex officio*
Carol C. Baskin (2002), *ex officio*

2. Merit Awards (3 appointed members, 3 year terms)

Maxine Watson (2002), Chair
Chris Haufler (2003)
Chris Campbell (2004)

3. Darbaker Prize (3 appointed members; 3 year terms)

Louise Lewis (2002), Chair
Robert Bell (2003)
Debabish Bhattacharya (2004)

4. Esau Award (3 appointed members; 3 year terms)

Jeff Carmichael (2002), Chair
Geeta Bharathan (2003)
Dennis Stevenson (2004)

5. Karling Graduate Student Research Awards (6 appointed members; 3 year terms)

Gene Mapes (2003), Chair
Kathleen Pryer (2003)
Javier Francisco-Ortega (2004)
Amy Litt (2004)
James Quinn (2004)
Susanne Renner (2004)

Publications of the Society

1. *American Journal of Botany*

Karl J. Niklas, Editor-in-Chief (2004)

2. *Plant Science Bulletin*

Marshall Sundberg, Editor (2004)
Editorial Committee for Volumes 47/48
Ann E. Antlfinger (2002)
Norman C. Ellstrand (2003)
James Mickle (2004)
Andrew Douglas (2005)
Douglas Darnowski (2006)

Representatives to Various Organizations:

1. AAAS Council – vacant

2. AIBS Council – Patricia Gensel

3. Association of Systematics Collections –
Laurence E. Skog (2003)

4. Biennial Incorporation, State of Connecticut –
Kent E. Holsinger

5. Council of Scientific Society Presidents (Pres.-
Elect, Pres., or Past-Pres.) –
Scott Russell, Judy Jernstedt, Patricia
Gensel

6. National Research Council Commission on Life
Sciences Board of Basic Biology –

Jennifer Richards (2003), Secretary, *ex officio*

Submitted by the Committee on Committees:

Judy Jernstedt (2001), Chair
Gar Rothwell (2001)
Richard McCourt (2001)
Linda Graham (2002)
Tom Ranker (2002)
Ned Friedman (2003)
Jerrold Davis (2003)
Jennifer Richards (2003), Secretary, *ex officio*

Annual Report of the Conservation Committee

The Conservation Committee has increased contacts with other conservation groups, reviewed a request from the California Native Plant Society, and developed ideas for longer-term activities.

Contact with other plant conservation groups.

The Conservation Committee has continued its contact with other plant conservation groups such as the IUCN, the Plant Conservation Alliance, the Garden Club of America, and the California Native Plant Society. We intend to continue these interactions and to keep lines of communication open. Additional contacts are being made in an effort to publicize the existence of the Committee as a service to the BSA and other interested parties.

Role of the Botanical Society of America in environmental advocacy.

The Conservation Committee has been asked to comment on a solicitation of endorsement received from the California Native Plant Society. In this solicitation, the BSA was asked to endorse an "open letter" from the CNPS and other plant conservation groups urging that the Federal Endangered Species Act be emended to give equal protection to plants as given to animals (particularly vertebrates). Several conservation groups (e.g., National Parks and Conservation Association, Sierra Club, etc.) and native plant societies (e.g., Florida, Oregon, Indiana, etc.) have signed this petition but no other professional society has. For lack of consensus on the issue and an unclear picture on the BSA rules for advocacy, we have not directly signed this letter but have decided to develop a plant

conservation position statement for the BSA. At the request of BSA President Gensel, we are currently working on guidelines for this position statement and for BSA advocacy in general.

Many other professional societies maintain stated positions on issues of concern such as increased federal funding for scientific research and international treaties such as the Kyoto protocol on Global Warming. The BSA itself has sent letters to the governors of Kansas and Tennessee on the teaching of evolution in schools. However, Article XIV.3 of the BSA bylaws states:

"Whereas The Society exists for scientific and educational purposes, it may engage in efforts intended better to inform the public on issues pertaining to plant science and the influences of plants on people as an element in the biosphere. The Society, nevertheless, shall not allow any part of its activities to become those of lobbying or espousing particular scientific, economic, political, social, or religious doctrines or dogmas."

Given what seem to be conflicts between the wording of the BSA bylaws and the actual and/or desired level of advocacy, the Conservation Committee is currently evaluating comparable bylaws for other professional societies. A summary of these will be presented to the BSA president as recommendations for BSA positions on similar issues.

Responding to inquiries.

Several unsolicited letters were received from interested parties asking for information on plant conservation, wishing to volunteer their time to plant conservation efforts, or specifically asking for funding from the BSA. Responses to these letters were made and the parties were directed to the requested information or contacts.

A solicitation for funds to help publish a brochure on invasive species was received from the Plant Conservation Alliance. Although the deadline for requests for the upcoming budget has passed, this solicitation will be forwarded to the Council for consideration.

Charges for the future

President Gensel has asked that each Section and Committee develop ideas for future efforts and directions. Several ideas for the Conservation Committee have been discussed including publication or assistance with publication of materials related to plant conservation, development of BSA Plant Conservation web pages,

organization and support of symposia for discussion of plant conservation issues, and more direct coordination with other groups concerned with plant conservation.

Some of these ideas can be addressed directly within the current structure of the Conservation Committee but others can only be accomplished through reorganization as a Section. The BSA by-laws permit Sections (as interest groups) to hold symposia and to promote research and education in their respective areas. Committees, however, serve largely as sources of information and advice to the Council and normally do not hold symposia. Creation of a Plant Conservation Section is not being proposed formally at this time but the idea has been presented and we request input and feedback for future consideration.

Respectfully submitted,

William J. Hahn, *Chairperson*,
Conservation Committee

Education Committee

The committee continued work on several major projects:

Improvement of Pre-College Science Education

GOAL: To support the improvement of science education through participation at conventions of science teachers.

STATUS: Again this year, the Education Committee and the Teaching Section cooperated in representing the BSA at the annual meeting of the National Science Teachers Association in St. Louis, MO (April 6-9, 2000).

NABT: Met this year in Orlando but BSA was not represented. Our budget request for 2000-2001 (for \$10,400) was approved at only \$7,000—not enough to cover both conventions. We feel we can reach more teachers, including elementary teachers, at NSTA (by far the larger of the two conventions) but we need to make more efforts to assist high school and community college biology teachers and our presence at NABT would be a good way to reach that goal. We're asking that funding be restored this year.

NSTA: Rob Reinsvold and Dan "Tim" Gerber staffed the BSA booth. They were assisted by

Jason Yusten, Meghan Buck, Megan Thomas, and Eric Reinsvold. Drs. Reinsvold and Gerber also presented a workshop on "Spice Rack Botany" to a standing-room-only crowd. Conference attendance totaled approximately 20,000 teachers (of all the sciences) and we had direct contact with at least 1,500 of them. We propose having a BSA presence at the 2002 national NSTA conference in San Diego, CA, and have submitted proposals for 2 workshops in addition to the booth.

The success of this outreach attests to the need for expansion of these efforts. We encourage BSA members to attend regional conferences of NSTA. We also need to expand our commitment to presenting workshops at these conferences.

Motion: That the Council approves a sum, not to exceed \$10,400 (for travel, lodging, registration fees, booth rental and handout materials) for selected BSA members to attend national, regional, or state meetings of organizations like the National Association of Biology Teachers and National Science Teachers Association for the purpose of presenting workshops on plant biology in the K-16 and community college curriculum and distributing educational materials in support of expanding the quantity and quality of plant biology. The proposed budget is on the next page:

2001-2002 PROPOSED BUDGET

NABT: Booth	\$1500
BSA Volunteers (3 X \$1000)	\$3000
Handout Materials	\$ 500
Sub-Total	\$5000
NSTA*: Booth	\$1700
BSA Volunteers (3 X \$1000)	\$3000
Handout Materials	\$ 700
Sub-Total	\$5400
TOTAL	\$10,400

*Expenses at NSTA are higher because it is a much larger conference (more attendees) and, therefore, tends to be in venues that charge more for exhibit space.

If the Council approves the expenditure, the Education Committee, as in the past, will select members to represent BSA in these activities and will authorize payments upon proof that the workshops and other outreach activities were performed as proposed.

Discussion Session at the Albuquerque BSA Meeting

GOAL: To support BSA members as their institutions modify curricula in the direction of eliminating or drastically reducing studies of plant biology.

STATUS: **Gordon Uno** has organized a discussion for this meeting, "The future of botany at the undergraduate level" (Tuesday, 3:30-4:30 pm, Session D3 - ACC, 201-La Cienega). As stated in Dr. Uno's abstract,

BSA members report, with increasing frequency, attempts across the country to eliminate or reduce the number of botany courses taught at the undergraduate level, to reduce college/university resources directed toward plant science activities, to replace retiring botanists with scientists from other disciplines, as well as attempts to eliminate entire botany departments and programs. These events have had and will continue to have a major impact on graduate programs and the future of the botanical sciences at the undergraduate level. This roundtable discussion will include members of the Education Committee of BSA, but is open to all interested members.

We hope to hear from BSA members who may have experienced "assaults" on botany at their home institution or from members who have had success in convincing colleagues and administrators of the importance of botany to the life sciences and to their college or university.

We will generate a "vision statement" in the defense of botanical sciences that focuses on the importance of keeping botany in the undergraduate curriculum. We also hope to develop a list of useful methods and strategies to include plants in the study of modern biology at the undergraduate level and a list of the best practices to attract and keep undergraduate majors and minors in botany.

Poster: McIntosh Apple Growth and Development

GOAL: To provide attractive, accurate, inexpensive educational materials for teachers of plant biology at all levels.

STATUS: With approval of Council, the Education Committee's major project this year was the publication of a four-color poster showing 20 stages in the growth and development of a McIntosh apple. **David Kramer**, chair of the Education Committee, organized the project. Design and printing was done at the Ohio State University Printing Facility. McGraw-Hill Publishers (thanks to sponsoring editor **Marge Kemp**) provided \$2800 to cover printing costs for 8,000 posters and another \$250 to partially support the honorarium (\$750) for the photographer/artist, **Brent Seabrook** of Lakewood, OH. **Steve Rice** and **Amy Russell** at Union College created hands-on activities related to the poster. Their carefully conceived pioneering work can serve as a model for additional learning activities which can be added in the months ahead. Finally, our overworked and underpaid web master, **Scott Russell**, contributed many hours of work to take material from several contributors and mold it into a unified design on the BSA web site [[http://](http://mcintosh.botany.org/)

mcintosh.botany.org/]. The Education Committee of the Botanical Society is indebted to each of these people, members and non-members, for their support in our effort to improve the quality of plant science education. We have received many compliments from teachers who are using the poster and activities. The poster is an excellent handout for teachers at the BSA booth at their conventions. Copies are available at this meeting at the BSA booth.

It should be noted that in addition to the poster as a single artistic work, BSA also has permission from the photographer/artist to publish the individual images on our web site for free downloading for educational purposes. The copyright agreements behind this project were new to us and are on file as models for future projects.

There have been some questions about the method of funding this project and whether the inclusion of the McGraw-Hill logo on the poster is any kind of BSA endorsement for their company or publications. The request for approval and funding of this project was brought before the Council at the August 6, 2000 meeting in Portland. The concept of the proposal was approved (including the use of a sponsor's logo) but the Council, regrettably, could not fund it. The chair was encouraged to seek outside funding. McGraw-Hill was the first publisher approached and they eagerly agreed to support the project. This kind of "creative financing" perhaps should be pursued for future BSA projects. This approach has been taken by ASPP and other societies who have projects much larger than our own. The widespread practice is not seen as an endorsement by the vendors but merely as an expression of appreciation to the scientists who write, invent, and use their materials. The need for outreach is so enormous that it can never be adequately funded from BSA members' dues alone.

Future Possibilities for Education Committee Projects

Note: Many of these have been on this list for several years but are still viable projects.

To publish hands-on, discovery-type plant biology exercises for use in schools as well as at colleges and universities. We now have a model for publishing these on our web site and/or in hard copy (but web publication is less expensive and more easily edited and expanded).

To publish additional educational posters and accompanying materials (see above).

To publish a white paper about the role of plant biology in the undergraduate curriculum. This idea will be explored in a discussion here at the Albuquerque meeting.

To offer assistance to publishers who are seeking professional review of manuscripts for plant biology and general biology books. We want to make sure the plant biology content is correct before it is published. A national review of science textbooks used in the schools strongly criticized the inaccurate science content and the boring pedagogical approach of most of these textbooks.

To publish instructions for growing plants in the classroom with a list of easy-to-grow plants that illustrate various morphological and/or taxonomic principles. This idea grew out of discussions with representatives of the American Horticultural Society but has not been pursued.

To add images to our online plant image data base and also to improve the captions on many of the images.

To work with Program Chair Jeff Osborn to develop his outstanding suggestion for a new format for the 2002 meeting scheduled for the University of Wisconsin. The facilities at UW support workshops and presentations using the latest in educational technology. We want to take advantage of that. Plans for educational meetings prior to the traditional conference will be developed at this meeting.

Final Comment

In addition to its appointed members, the Education Committee has a number of volunteers who help with various projects. Any member who wants to be actively involved with any of the committee projects should contact the chair.

The chair thanks all members and volunteers of the committee for their support and especially thanks the officers of BSA for supporting the work of this committee and encouraging the BSA to be more active in educational outreach. My 5-year term as member and chair of the Education Committee comes to a close at this meeting and I shall always cherish the friendships made through the committee's activities.

Respectfully submitted,

Dr. David W. Kramer, Chair

Annual Report, Elections Committee

As chair I worked with the committee members to provide candidates for President and Treasurer. Ed Schneider and Scott Russell were the nominees for President-Elect and Joe Armstrong and Carl Taylor for Treasurer. Scott Russell is President-Elect and Joe Armstrong the new Treasurer.

Doug Soltis, *Past President and Chairperson, Elections Committee*

Esau Award Committee Annual Report

The 2000 Katherine Esau Award was given to Chris Meloche from the University of Colorado, Boulder, for a paper co-authored with Pamela Diggle on "Patterns of carbon allocation in *Acomastylis rossii* (Rosaceae), an alpine plant exhibiting extreme preformation." Four students have requested to be considered for the Esau Award this year.

Respectfully submitted,

Phil Gibson, *Chairperson,*
Esau Award Committee

BSA/Karling Student Research Award Committee

Purpose and Funding: The Karling Graduate Student Research Award was instituted by the Society in 1997 with funds derived through a generous gift from the estate of the eminent mycologist, John Sidney Karling (1897-1994), and supports and promotes graduate student research in the botanical sciences. To be eligible, an applicant must be a member of the Botanical Society of America (BSA), a registered fulltime graduate student, have a faculty advisor who is also a member of the BSA, and not have won the award previously. Initially, in 1997, two awards were presented, but interest in the program was so great that in 1998 the Society began supplementing funds from the interest on the original \$10,000 gift with moneys stemming from proceeds of sales of BSA logo items. In 1998 and 1999, ten awards were presented annually. In 1999, the council approved a further major influx of funding for the program, now renamed the BSA/Karling Graduate Student Research Award, and authorized up to 15 awards for the 2000 competition. Because of changes in the economy, up to 10 awards were

authorized for the 2001 competition.

Committee Organization and Membership: This is the third year that the BSA/Karling Graduate Student Research Award Committee has been charged with evaluating submissions for awards. Initially, proposals were submitted to the BSA Disciplinary Sections, reviewed and ranked by sectional officers, and then forwarded to the BSA Executive Committee for further review and funding decisions. The committee revised and distributed the "Call for Applications", reviewed all submissions, made funding decisions, and communicated with the applicants. The 2000/2001 committee membership consisted of:

Kathy Kron (Wake Forest University, Chair)
Yin-Long Qiu (University of Massachusetts, Amherst)
Gene Mapes (Ohio University)
Kathleen Pryer (Duke University)
Steve Rice (Union College)
Jonathon Shaw (Duke University)

2001 Submissions: This year we received 33 proposals for the Karling Award (10 less than last year). As in previous years, the generally high quality of the proposals made the selection process difficult. Of the 33 proposals received, 20 designated (or fit) the systematics section affiliation, four designated genetics, and there were two designations each for bryology, ecology, structure/development, and paleobotany. One proposal came from the phytochemical section.

2001 Awards: Ten BSA/Karling Graduate Student Research Awards will be presented at the 2001 BSA banquet. Each awardee will receive a certificate and a \$500 award. The 2001 awardees are as follows:

Fan, Chuanzhu; Molecular evolution of hybridization and polyploidization in the dwarf dogwoods complex...; North Carolina State University; Advisor—Dr. Jenny Xiang; Systematics Section.

Farzad, Maryam; Regulation of anthocyanin expression in *Viola*; Georgetown University; Advisor – Dr. Martha Weiss; Phytochemical Section.

Hearn, David; Evolution of growth form and phytochemical consequences in *Adenia* (Passifloraceae); University of Arizona; Advisor – Dr. Lucinda McDade; Systematics Section.

McMahon, Michelle; Morphological diversification in Amorpheae (Papilionoideae, Fabaceae); Washington State University; Advisor – Dr. Larry Hufford; Structural/Development Section.

Miller, Allison; Domestication in a tropical fruit tree, jocote (*Spondias purpurea* L., Anacardiaceae); Washington University; Advisor – Dr. Barbara Schaal; Systematics Section.

Powell, Elizabeth; Peruvian species of *Satyria* – Critical to understanding species limits in *Satyria* and biogeography in Neotropical Vaccinieae; Wake Forest University; Advisor – Dr. Kathleen A. Kron; Systematics Section.

Tank, David; Phylogenetic analysis of subtribe Castillejiniae (Orobanchaceae – Tribe Rhinanthaeae); University of Washington; Advisor – Dr. Richard Olmstead; Systematics Section.

Tomescu, Alexandru; In situ land plant fossils in the Early Silurian (Llandoveryan) Massanutten sandstone of Virginia; Ohio University; Advisor – Dr. Gar Rothwell; Paleobotanical Section.

Torke, Benjamin; Phylogenetic relationships and diversification in *Swartzia* (Fabaceae), based on DNA sequence data; Washington University; Advisor – Dr. Barbara Schaal; Systematics Section.

Whittall, Justen; Phylogenetic tests of ecological speciation in the North American columbines; University of California at Santa Barbara; Advisor – Dr. Scott Hodges; Genetics Section.

Membership and Appraisal Committee Annual Report

New posters and brochures describing the work of the society and types of memberships available were mailed to BSA Campus Representatives last fall through Kim Hiser in the BSA Business Office. Representatives are asked to put up a poster about the Botanical Society and answer questions about membership. There are approximately 240 representatives from most of the states (except Idaho, Utah and West Virginia) and 11 countries. States that are well represented include California, Illinois, New York, North Carolina, Pennsylvania, and Wisconsin. Additional representatives would be helpful in Michigan, Montana, Nevada, New Mexico, North Dakota, and Rhode Island. The Chair of this committee was on the ad hoc Membership Tiers Committee that made recommendations about restructuring membership in the Botanical Society to compete more effectively with the American Society of Plant Physiologists, newly renamed the American Society of Plant Biologists. The Membership Tiers

Committee Report was sent to the BSA Executive Committee and used as the basis for making recommendations about membership at the 2001 annual meeting. The recommendations included a restructuring of membership dues, new categories of membership, and additional options for membership with or without electronic access. Assuming the changes are approved at the annual meeting, new posters and brochures will be sent to the Campus Representatives this fall.

Membership in the Botanical Society over the last 10 years has dropped by about 200 members, from 2,575 in 1991 to 2,363 members in 2001. Systematics is the largest section and has stayed approximately the same in size for the last 10 years. Other large sections are the Ecological, Teaching, Developmental and Tropical sections. The Physiology section has seen the largest drop in membership.

For the coming year this committee will 1) maintain and update the list of BSA Representatives, 2) support a mailing of new posters and brochures with updated membership information at the beginning of the academic year, and 3) encourage maintaining the core membership, reaching out to new members through the internet and personal contacts (perhaps current members could receive some sort prize for recruiting new members), and developing new membership categories such as K-12 teachers.

Respectfully submitted,

Kathleen Shea, *Chairperson,
Membership and Appraisal Committee*

2001 Annual Report of the Financial Advisory Committee (FAC)

The FAC has the responsibility for managing the BSA Endowment Fund. The BSA assets are invested through Salomon Smith Barney (SSB). In the fall of 2000, the majority of endowment funds were reorganized under a management group (managed funds) within SSB and about 15 percent of the endowment was retained in an unmanaged money market fund within SSB. All of these funds are divided among the following categories (as of June 30, 2001):

Managed money funds –

Cash balance	\$	469.65
Money funds	\$	20,529.79
Accrued dividends.	\$	8.74
Common stock & options . .	\$	1,662,434.34
Unmanaged money funds		
Money funds	\$	318,116.37
Accrued dividends.	\$	695.45
Total		\$2,002,294.34

Ø The BSA Endowment fund has grown 7% since June 2000 (\$1,867,492.41) and has grown 126.4% since its inception 7.5 years ago (12/93; \$884,317). This represents an average increase of about 16.86% per year.

Ø The BSA received the final payment (\$32,596.42) to the endowment fund of a total gift of \$232,596.42 from the estate of Drs. Richard and Deana Klein, longtime members of the BSA. Acknowledgement of this gift has been recorded with the estate officials and in the *PSB*.

Ø The stock market has been quite volatile this year. The timely change to both an SSB managed account and an unmanaged money market account last fall greatly reduced losses to the endowment. An SSB representative will be meeting with the FAC on Saturday prior to the Council meeting (see above** for meeting time and location) to provide this assessment, and make recommendations about the Endowment Fund for this coming year. Based on this past year's market losses and increases from transfers and gifts, the FAC recommends the following:

Recommendation 1: The FAC recommends that \$27,400 be used from the Endowment Income for the 'special initiatives' during the 2001-2002 fiscal year, as determined by the Executive Committee and Council per Guideline 4. (see Guidelines below).

Recommendation 2: The FAC recommends that the section and special accounts with \$2,500 or more annual balances, receive an interest rate of 8 percent, except in a year when the endowment fund interest falls below this level. In that year the interest rate will be 2 percent less than the endowment interest rate. (*note italicized paragraph at the end of this report*)

Ø At the 2000 BSA Annual Meeting, the Council approved: 1) money be spent to prepare a brochure and letter to be sent to selected members of BSA; and 2) pursue and evaluate the need to hire a development firm to aid in increasing contributions to the Endowment Fund.

1) Last fall, 431 letters and brochures (389 USA and 42 foreign) were sent to individuals who

had been members for 25 years or more (1975 or earlier). As of this report, the Business Office has received little response and has estimated that increased giving (as of April 2001) to the endowment fund increased only \$792 over the previous year. No assessment of the long-term impact of this approach has been made. However, the FAC realized that this approach, given time and resources, was the least likely to receive a positive response.

2) Since last fall, the FAC has solicited two proposals from development officers/firms (Charitable Fund Raising, Inc. and Daniller + Company). It has evaluated the proposals and the costs for hiring a firm during at least a three-year period. The FAC believes that this approach is a viable way to significantly enhance the BSA Endowment Fund to support a variety of areas that the Executive Committee (EC) has identified in its deliberations this spring and summer, regarding a strategic plan. Details and costs related to the following recommendation will be presented to the Council in relation to the EC strategic plan.

Recommendation 3: The FAC recommends that Daniller + Company (Mae Daniller, President; consulting team, Mae Daniller and David Northington) be hired for a period of up to three years (with the option of extending this term) to serve as the development firm to raise funds for the BSA Endowment.

The Endowment Fund Guidelines and Interest Earnings for Special and Section Accounts are available on the web site report.

Summary of How Interest Earnings for Section Accounts and Special Funds are Determined by (adopted in 1999):

Section cash accounts with the balance of over \$1,000 will earn 2% quarterly; 8% per year.

All special funds with a balance of \$2,500 or greater will earn the same percentage market rate as the Society's Salomon Smith Barney portfolio. Please note that in some quarters this may result in an actual loss of funds, but based on historical averages, each section should enjoy improved growth of their special fund account(s). Those sections whose balance is below \$2,500 may wish to move the special fund balance into the cash account fund and take advantage of the 8% yearly rate of return.

The remaining committee and section reports will be published in the Winter Issue, 47(4). They may be viewed on-line at the BSA Website.

News from the Annual Meeting

Honors and Awards

A. Honors and Thanks to

Wayne Elisens (first and only Meeting Coordinator)

Scott Russell (pioneering Webmaster)

Ed Schneider (retiring Treasurer)

B. Merit Award

Carol and Jerry Baskin, joint award

The BSA Merit Award Committee is pleased to recommend that the 2001 award be given to Carol and Jerry Baskin. We were impressed by their extensive contributions to the field of seed ecology, each having about 300 articles and other important publications. Their lab is the only one in the world that has been able to maintain a research focus on seed ecology for such a long time, since the mid-1960s.

The Baskins have also written a highly-praised book, "Seeds-Ecology, Biogeography, and Evolution of Dormancy and Germination, published in 1998 by Academic Press. An excerpt from one review of this book states "Carol and Jerry Baskin bring many years of seed germination experience with a wide array of species to what is an inspiring work. They interweave their own studies of numerous temperate North American species with those done by others world-wide. To provide some idea of scope, individual chapters contain hundreds of references, with two chapters each having more than a thousand. Just as the number of studies presented is extensive, so too is the number of species. Nearly 6400 are listed in the taxonomic index! These species provide a substantive base for the concluding discussion of biogeographic and evolutionary aspects of seed dormancy and germination. We are indebted to the Baskins' for their fine contribution, surely a labor of love, to the seed literature."

Proponents also cite Carol and Jerry Baskin's generous service to the Botanical Society of America and other societies, on editorial boards, and in helping undergraduate and graduate students. They have been an inspiration to their own students and colleagues worldwide as exceptionally kind and tolerant people

C. Gleason Award

Each year the New York Botanical Garden presents the Henry Allan Gleason Award for an outstanding publication in the field of plant taxonomy, plant ecology, or plant geography. The Gleason Award for 2001 is presented to Dr. Kathy Meney and Dr. John Pate for their book, *Australian Rushes: Biology, Identification and Conservation of Restionaceae and Allied Families*, published by the University of Western Australia Press. This publication represents a masterly treatment of all aspects of the biology of the Australian rushes. Augmented by the superb illustrations by Ellen J. Hickman, it combines excellence in both plant taxonomy and plant ecology, successfully bringing these two areas together in its focus on the conservation of these fascinating plants and their habitats and requirements.

D. Section Awards:

A.J. Sharp Award (Bryological and Lichenological Section)

The A.J. Sharp Award is presented each year by the American Bryological and Lichenological Society for the best student presentation. The award, named in honor of the late Jack Sharp, encourages student research on bryophytes and lichens.

This year Honorable Mentions go to **Linda C. Fuselier** of the University of Kentucky for her paper on "Sex-specific and environment-dependent phenotypic selection on pre-adult traits in *Marchantia inflexa*," and to **Scott W. Schuette** of Southern Illinois University for his paper on "Morphology of the simple thalloid liverwort *Jensenia* Lindb. (Pallaviciniaceae)".

This year's A.J. Sharp Award goes to **Dennis P. Wall** from the University of California, Berkeley, for his paper "Population structure and patterns of island radiation in the paleotropical endemic moss, *Mitthyridium*: insights from a rapidly evolving nuclear gene, glyceraldehyde 3-phosphate dehydrogenase (*gpd*)."

Katharine Esau Award (Developmental and Structural Section)

This award was established in 1985 with a gift from Dr. Esau and is augmented by contributions from Section members. It is given to the graduate student who presents the outstanding paper in developmental and structural botany at the annual meeting. This year's award goes to **Steven Jansen** from the Institute of Botany and Microbiology, K.U. Leuven, Kasteelpark Arenberg, for his paper "Vestured pits: a wood anatomical character with

strong phylogenetic signals at high taxonomic levels." Co-authors were Pieter Baas and Erik Smets.

Ecological Section Award (Ecology Section)

The Ecological Section Award is given for the best student paper presented at the meetings. This year's award honors 2 students:

Radika Bhaskar from Stanford University for her paper "Responses of hydraulic traits to light and water availability in a California chaparral shrub." David Ackerly was co-author.

Nicole Sudler from University of Kentucky, Lexington, for her paper "Phenotypic selection on sexual reproduction vs. clonal expansion in five populations of *Viola blanda*."

The best student poster in the Ecological Section was by Priscilla Callahan from University of Oklahoma, entitled "The effects of mesquite (*Prosopis glandulosa*) encroachment on species diversity and composition of a mixed grass prairie." Bruce Hoagland and Phillip Crawford were co-authors.

Economic Botany Section Poster Award

This award for the best student poster at the annual meetings goes to **Susannah B. Johnson** from New Mexico State University, Las Cruces, NM. for her poster "An ethnobotanical study in Tamil Nadu, India, of *Phoenix humilis* and *Borassus flabellifer* (Arecaceae), focusing on their combined use in the construction of brooms."

Margaret Menzel Award (Genetics Section)

The Margaret Menzel Award is present by the Genetics Section for the outstanding paper presented in the contributed papers sessions of the annual meetings. This year's award goes to Briana Gross from Willamette University, Salem, OR, for her paper "Potential multiple origins for *Helianthus deserticola*, a diploid hybrid species." Her paper was co-authored by Andrea Schwarzbach and Loren Rieseberg.

The **Genetics Section Poster Award** is given for the best student poster at the annual meetings. This is a new award, which is planned to be continuing. This year's award is given to **Hannah E. Thornton** from Florida International University and Fairchild Tropical Garden, Miami, FL. The title for her poster was "Genetic variation in fragmented populations

of an endangered dune plant: implication for its conservation.” Co-authors were Cynthia Lane and Javier Francisco-Ortega.

The **Genetics Section Graduate Student Research Award**, given to support student research in genetics, is awarded to **Lena Hileman** of Harvard University for her proposal “Molecular evolution of floral symmetry genes (CYCLOIDEA and DICHOTOMA) in a recent tetraploid *Mohavea*.”

Moseley Award (Paleobotanical and Developmental and Structural Sections)

The Maynard F. Moseley Award was established to honor Dr. Moseley’s career of dedicated teaching, scholarship, and service in structural and evolutionary botany. The award recognizes a student paper that best advances our understanding of the anatomy and/or morphology of vascular plants within an evolutionary context. Two awards will be presented this year. The awardees are:

Genaro Hernandez-Castillo from the University of Alberta, Edmonton, Alberta, Canada for his paper “Evidence for compound pollen cones in Paleozoic conifers”. Co-authors were Gar Rothwell and Gene Mapes.

Maria Von Balthazar from the University of Zurich, Zurich, Switzerland, for her paper “Floral structure and phylogeny of Buxaceae.” Her co-author was Peter Endress.

Isabel C. Cookson Award (Paleobotanical Section)

The 2001 Isabel Cookson Award, recognizing the best student paper presented in the Paleobotanical Section, is awarded to **Aude Soria** of Universite Montpellier, France, for her paper entitled “Development and architecture of a gondwanan representative of the late Devonian genus *Pietzschia* (Cladoxylopsida). Co-authors were Brigitte Meyer-Berthaud and Stephen Scheckler.

Li-Cor Prize (Physiological Section)

The Li-Cor Prize from the Physiological Section acknowledges the best physiological presentation made by any student, regardless of sub discipline, at the annual meeting. The award this year goes to **Tara Lin Greaver** from the University of Miami for her paper “The effects of reflected light on the anatomy and photosynthesis of *Ipomoea pes-caprae* (L.) R. BR. (Convolvulaceae), a tropical sand dune vine.”

Edgar T. Wherry Award (Pteridological Section and the American Fern Society)

The Edgar T. Wherry Award is given for the best paper presented during the contributed papers session of the Pteridological Section. This award is in honor of Dr. Wherry’s many contributions to the floristics and patterns of evolution of ferns. This year’s award goes to **Sabine Hennequin** from the Universite Pierre et Marie Curie, Paris, France, for her paper “Systematics of the fern genus *Hymenophyllum* s.l. (Hymenophyllaceae) inferred from *rbcL* and *rps4* nucleotide sequences and morphology.” The paper was co-authored by Jean-Yves Dubuisson.

George R. Cooley Award (Systematics Section/ American Society of Plant Taxonomists)

The ASPT’s Cooley Award is given for the best paper in systematics given at the annual meeting by a botanist in the early stages of his/her career. Awards are made to members of ASPT who are graduate students or within 5 years of their post-doctoral careers. The Cooley Award is given for work judged to be substantially complete, synthetic and original. This year’s Cooley Award is given to Mary Kathryn “Maggie” Whitson from Duke University for her paper “Untangling *Physalis* (Solanaceae) from the physaloids: two-gene phylogeny vindicates the splitters.”

For Images of the Annual Meeting See:
<http://www.botany2001.org/images/thumbs1.html>



Things To Come

A day-long BSA planning exercise involving current and several past BSA officers took place in Albuquerque on Thursday, August 16, 2001. It was facilitated by botanist and professional planning consultant David Northington. Details of this meeting and the outcome will be in the Fall letter from the BSA President.

Botany 2002 Conference to Include a new 'Forum' on Botanical Education and Outreach

The Botanical Society of America (BSA) will hold its next annual meeting in Madison, Wisconsin. In addition to the BSA, four other professional societies will participate in the Botany 2002 conference, including the American Fern Society (AFS), the American Society of Plant Taxonomists (ASPT), the Canadian Botanical Association (CBA), and the Phycological Society of America (PSA).

In addition to the regular conference, which runs from Sunday through Wednesday (August 4-7), Botany 2002 will include an expanded format. A new FORUM focusing on botanical education and outreach will be held on Friday and Saturday (August 2-3), and it will be linked to the annual scientific meeting on Sunday (August 4) via workshops and field trips.

The FORUM will begin on Friday afternoon and evening with registration, an opening speaker, and a reception. The main sessions will occur on Saturday. Although some informational sessions will be included, the program will primarily include interactive panel and roundtable discussions as well as breakout groups focusing on a range of topics. General session themes being considered include 'Investigative Laboratories,' 'Botanical Content in the Curriculum,' 'Undergraduate Research,' 'Graduate Student & Junior Faculty Development,' 'Funding,' 'Outreach,' and 'Management.' A public outreach lecture, open to the entire Madison-area community, will be presented on Saturday night. Sunday's offerings will include a broad range of hands-on workshops. Two-hour, half-day, and full-day workshops will be organized so that attendees can participate in more than one workshop, and/or participate in field trips, also being planned for Sunday.

A Planning Committee, including representatives from all societies meeting at Botany 2002, is developing the FORUM program, and encourages all members to participate by submitting topics/organizing Sessions and Workshops, as well as attending the FORUM. A *Call for Session Topics* will be distributed to all BSA members in the Fall mailing and will be available on the Botany 2002 website <http://www.botany2002.org/>. The *Call for Workshops* has already been posted on the conference website. General questions or comments should be directed to the BSA Program Director: Jeffrey M. Osborn, Division of Science, Truman State University, 100 E. Normal Street, Kirksville, MO 63501-4221. Tele: (660) 785-4017, Fax: (660) 785-4045, E-mail: josborn@truman.edu.

Announcements

New Resource at the New York Botanical Garden Provides Access to Unique Historical Collections of More Than a Century of Exploration

The New York Botanical Garden's Archives, part of the collections of **The LuEsther T. Mertz Library**, maintain a one-of-a-kind collection of items, artifacts, and papers resulting from the research of botanical explorers associated with the institution. The holding of these collections have been summarized on newly released **Web Finding Guides**. The Guides, created to aid the researcher in locating material within the collections, also provide personal and professional profiles of many of the men and women who have contributed to the history of botanical exploration and the evolution of the modern conservation movement.

Among the many profiled are such renowned botanists as John Torrey and Asa Gray, co-authors of the profoundly influential *Flora of North America*; Thomas Edison who worked with the Garden to find a domestic rubber producing plant; Alexander Anderson who invented the process used to puff wheat and rice; and Otto Degener who discovered the missing link between fruiting and non-fruiting plants.

The archival Finding Guides provide biographical notes on the people whose extensive collections are held in the Library and a descriptive list of the contents – from John Torrey's vasculum; to a letter dated 1631 from the Countess de Cinchon, for whom the cinchona plant (from which quinine is derived) is named; to letters, picture, and reminiscences describing 19th and 20th century expeditions. They can be accessed at www.nybg.org/bsci/libr/List1.html.

These collections of primary documents and artifacts piece together stories of botanical exploration. They document war-time expeditions; reveal emerging concepts of plant evolution; illustrate intricate social currents between scientific communities of the developed and non-developed world; sketch complex motivations of scientists and their sponsors; detail the emergence of contemporary attitudes toward conservation; and much more.

Since 1994, the Library has provided public access through its online catalog of the bibliographic records for all book and serial holdings. This catalog is called CATALPA, the **CATA**log for **Library Public Access**, and found on the Web at librisc.nybg.org/screens/opacmenu.html. Another Internet research tool, "The Virtual Herbarium of

The New York Botanical Garden” is the Garden’s ongoing initiative to digitally catalog its world-renowned Herbarium containing more than 6.5 million preserved plant specimens from around the globe. This tool can be accessed via the Web at www.nybg.org/bsci/cass/.

Symposia, Conferences, Meetings

VIII LATIN AMERICAN BOTANICAL CONGRESS

The VIII Latin American Botanical Congress will be held at the Convention Center, Cartagena de Indias, Colombia, October 13-18, 2002. It is being organized by the Latin American Botanical association (Asociación Latinoamericana de Botánica-ALB), the Colombian Botanical Association and the National University of Colombia, so far with financial support from the Latin American Botanical Network (RLB). The first circular has already been distributed via Internet. This VIII Congress continues a tradition which started in México City in 1972; we will be celebrating 30 years since the very successful 1st. Latin American Botanical Congress. The Organizing Committee is inviting the international botanical community to participate actively in this important gathering. Previous Latin American Congresses have attracted between 700 and 1500 participants. Many colleagues will remember that the 4th. Latin American Congress was held in the city of Medellín, Colombia, back in 1986. For additional information please contact the Organizing Committee at the following e-mail address: congrbot@ciencias.unal.edu.co

Enrique Forero, for the Organizing Committee (eforero@ciencias.unal.edu.co)

Positions Available

HARVARD UNIVERSITY BULLARD FELLOWSHIPS IN FOREST RESEARCH

Each year Harvard University awards a limited number of Bullard Fellowships to individuals in biological, social, physical and political sciences to promote advanced study, research or integration of subjects pertaining to forested ecosystems. The fellowships, which include stipends up to \$35,000, are intended to provide individuals in mid-career with an opportunity to utilize the resources and to interact with personnel in any department within Harvard University in order to develop their own scientific and professional growth. In recent years Bullard Fellows have been associated with the Harvard Forest, Department

of Organismic and Evolutionary Biology and the J. F. Kennedy School of Government and have worked in areas of ecology, forest management, policy and conservation. Fellowships are available for periods ranging from six months to one year and can begin at any time in the year. Applications from international scientists, women and minorities are encouraged. Fellowships are not intended for graduate students or recent post-doctoral candidates. Information and application instructions are available on the Harvard Forest web site (<http://lternet.edu/hfr/>). For additional information contact: Committee on the Charles Bullard Fund for Forest Research, Harvard University, Harvard Forest, P. O. Box 68, Petersham, MA 01366 USA or email (drecos@fas.harvard.edu). Annual deadline for applications is February 1.

Botany Field Collecting Position

The Biological Diversity of the Guianas Program, U.S. National Herbarium – MRC166, Smithsonian Institution, Washington, D.C., 20560-0166, U.S.A., has an opening for a plant collector. Beginning in January, 2002, the individual selected will spend a year in the Guyana, South American collecting plant specimens (minimum of 12 months in the Guianas), and one to two months in Washington, D.C., helping to identify these collections.

The position is a one-year contract and contains an active program of field work performed by the contractor to include no less than 5-6 field trips of 3-4 weeks (minimum) duration per trip into the interior of Guyana. Location of the trips is developed in consultation with the Program Director.

For additional information, please contact: Carol L. Kelloff, Biological Diversity of the Guianas Program, U.S. National Herbarium – MRC166, Smithsonian Institution, Washington, D.C., 20560-0166 U.S.A. (telephone: (202) 786-2518; fax: (202) 786-2563; email: kelloff.carol@nsmnh.si.edu).

This position is open to all qualified individuals and will remain open until a suitable person is found. The Smithsonian is an affirmative action/equal opportunity employer.

ASSISTANT PROFESSOR IN PLANT PHYSIOLOGY

The Biology Department, University of Nebraska at Omaha, announces a tenure-track, assistant professor position in plant physiology, starting August 2002. A completed Ph D in plant physiology or closely-related discipline is required. Postdoctoral research and/or teaching experience are desirable. Applicants with research interests in any area of plant physiology will be considered. Teaching responsibilities include an upper-division/graduate plant physiology course with a laboratory and participation in introductory biology survey courses. Graduate courses in the area of specialization may be developed. The successful candidate is expected to establish an active research

program. The university and department are strongly committed to achieving diversity among faculty and staff. We are particularly interested in receiving applications from members of under-represented groups and strongly encourage women and persons of color to apply. For more information about the department see the website (www.unomaha.edu/~wwwbio/). Screening of applications will begin October 1, 2001, and continue until the position is filled. Send CV, statements of teaching and research objectives, and three letters of recommendation to Chair, Biology Department, University of Nebraska at Omaha, 6001 Dodge St., Omaha, NE 68182.

of applications will begin October 1, 2001, and will continue until the position is filled. Please send application materials to:

Chairperson Search Committee
Department of Plant Biology
166 Plant Biology Building
Michigan State University
East Lansing, MI 48824-1312

Women and minorities are strongly encouraged to apply.
MSU is an affirmative action/equal opportunity employer.

Chairperson, Department of Plant Biology Michigan State University

Michigan State University invites applications and nominations for the position of **Chairperson** for its new **Department of Plant Biology**. Candidates should be qualified to hold the rank of tenured Full Professor.

The Department has more than 30 faculty members, strong graduate and undergraduate programs, and a support staff of career professionals. It is built on the concept of integrating all sub-disciplines of plant biology, ranging from evolution and ecology to molecular genetics. It maintains a close working relationship with the adjoining MSU-DOE Plant Research Laboratory and with other academic units in the biological sciences. Research is conducted in a modern research building, at an on-campus field facility, at the Kellogg Biological Station, and at field sites throughout the world. The Department is funded internally by the College of Natural Science and the Michigan Agricultural Experiment Station. The new chairperson will have the opportunity to significantly influence the future direction of the new department through the filling of several open positions.

The Chairperson is expected to provide leadership and to promote a creative environment for instruction and research. Candidates must possess an established record of scholarship, proven leadership and interpersonal skills, and a vision of innovative programs in research and education. Continuation of an active research program is encouraged and supported.

Applicants and nominees should submit a complete curriculum vitae and any supplemental material that they deem helpful for a preliminary screening. Every effort will be made to maintain confidentiality until the final slate of candidates is selected. Review

PLANTECOLOGIST.

The Department of Horticulture at Oregon State University seeks exceptional candidates to conduct innovative investigation of the use of plants and plant communities to remediate environmental problems.

This 12-month tenure-track Assistant Professor position will be available January 1, 2002. The successful candidate will develop a strong program of basic research supported by extramural funding in an area of ecology underlying important environmental issues; collaborate with professional and industry colleagues to identify and address relevant, important environmental issues; and participate in undergraduate and graduate education. Qualifications include a Ph.D. in ecology, horticulture, forestry, or other relevant field; and excellent training and accomplishments at the postdoctoral level. Applicants must submit a narrative describing their vision for this position, curriculum vita, copies of transcripts, and three reference letters sent directly from the writer. For additional information, call or e-mail Dr. William Proebsting, 541-737-5454, proebstw@bcc.orst.edu. The department website is at: www.orst.edu/dept/hort. Send all application materials to Viki Freeman, Dept. of Horticulture, OSU, 4017 ALS, Corvallis, OR 97331-7304.

For full consideration, all application materials must be received by November 1, 2001. Oregon State University is an Affirmative Action/Equal Opportunity Employer and has a policy of being responsive to the needs of dual career couples.

Book Reviews

Development and Structure

- p. 114 **The Biology of Lower Plants.** Willemse, M.T.B. 2000 - David Garbary
- p. 114 **Green Plants: their Origin and Diversity 2nd ed.** Bell, Peter R. and Alan R. Hemsley. 2000.
- Alicia Lesnikowska

Ecology

- p. 116 **Wetland Ecology Principles and Conservation.** Keddy, P. A. 2000. - Donald H. Les.

Economic Botany

- p. 117 **African Traditional Medicine: A Dictionary of Plant Use and Applications.**
Neuwinger, H.D. 2000. - Dorothea Bedigian
- p. 117 **Domestication of Plants in the Old World.** (3rd ed) Zohary, Daniel and Maria Hopf. 2001
- Dorothea Bedigian
- p. 118 **Roadside Use of Native Plants.** Bonnie Harper-Lore and Maggie Wilson, eds. 2000. - Mary M. Walker

Evolution

- p. 119 **The Ghosts of Evolution: Nonsensical Fruit, Missing Partners, and other Ecological Anachronisms.**
Barlow, Connie. 2001. - Andrea Weeks

Genetics

- p. 120 **Breeding Ornamental Plants.** Dorothy J. Callaway and M. Brett Callaway (eds) - Joanne M. Sharpe

Natural History

- p. 120 **Trees: Their Natural History.** Peter Thomas, 2000. - Nina L. Baghai-Riding.

Systematics

- p. 120 **Aroids: Plants of the Arum Family, 2nd ed.** Brown, Deni. 2000. - Douglas Darnowski,
- p. 122 **The European Garden Flora. Volume VI.** Edited by The European Garden Flora Editorial Committee.
- Marcel Rejmánek
- p. 122 **Wildflowers of the Fairest Cape.** Peter Goldblatt and John Manning. 2000. - Douglas Darnowski.
- p. 123 **Succulent Flora of Southern Africa.** Court, Doreen. 2000. Vic Landrum.
- p. 124 **Trees of Indiana.** Wampler, F. (paintings by M. Wampler). 2000. - James E. Eckenwalder
- p. 124 **The Multimedia Toolkit for Educators in the Plant Sciences CD-ROM.** Clayton, Mike.
- Martin G. Kelly.
- p. 125 **Penguin Dictionary of Plant Sciences, 2nd edition.** Edited by Jill Bailey. - Martin G. Kelly.

The Biology of Lower Plants. Willemse, M.T.B.. 2000. (CD-ROM US\$80 single copy; \$420 six copies). Wageningen UR Library, P.O. Box. 9100, 6700 HA Wageningen, The Netherlands (www.agralin.nl/lagere-planten/demo2.htm). This CD is neither a traditional textbook, nor a laboratory manual, nor an encyclopedic source of information. It might be looked upon as a textbook with the bulk of the verbiage removed. The author uses photographs, line drawings and animations in conjunction with very limited written text to explain taxonomic, ecological, physiological and developmental processes and information emphasizing non-seed plants. This CD is an important contribution because it begins to show the potential of what this format can attain.

There is an overall menu with blocks organized in columns for various plant assemblages: Algae, Fungi, Lichens, Mosses, Ferns, Seed ferns and Seed plants, and rows for categories of information: Introduction, Cytology, Development, Form and function, Reproduction, Dispersal, Life cycle and biotype. For Seed ferns and Seed plants only blocks for Reproduction are included. Subjects are often explored by clicking on buttons or diagrams or words. The animations of photosynthesis, tip growth, sinking rates of differently shaped planktonic organisms, etc. are among the highlights of the CD. The animations of the red algal or wheat rust life histories should make these difficult patterns transparent to virtually any student. Each section has a set of study questions in a variety of short answer formats that really do test understanding.

The work has a number of shortcomings. It desperately needs an index so that one can find particular topics. It is frustrating to know that there is something on photosynthesis or tip growth, and not have a simple method of finding it. There is a glossary, and it would be useful to be able link the definitions with the appropriate section of the CD where the concept was illustrated. The CD is designed for a linear examination of the topics for each plant assemblage, with side branches for deeper exploration of material. What is needed in addition is a mechanism to explore related concepts in different plants. I would also like to have been able to bookmark pages and then access them quickly, without having to remember in which menu block it was placed. The work suffers from being a translation, with the author and his editors not being fully at home in English. There are too many typographical errors (e.g. thalleus and xylane), and generic names are not italicized. The typos are especially unfortunate when they occur in taxonomic names, e.g. "Mycomycota" for Myxomycota. There are also a number of errors, e.g., alginat is given as the matrix polysaccharide for all algae not just for brown algae. Furthermore, some of the terminology is wonky, e.g., the various forms of "limnion" (as in epilimnion) referring to stratification in the "sea" rather than in lakes.

The classification used here is particularly annoying. It is as if the last 25 years of phylogenetic advances never

occurred. Despite claiming to treat plant phylogeny, I did not find a single cladogram. The motif of the 'tree' that symbolizes biology's most important concept is absent. For a phycologist it is particularly frustrating to see all eukaryotic algae placed in a single division, Phycophyta, and then to have the primary algal groups as subdivisions. I can see why the author wanted to group information for algae, fungi, bryophytes, etc. under single headings; however, I would like to have seen phylogenetic trees that would illustrate actual relationships of taxa. This would have been preferable to the paraphyletic and polyphyletic assemblages that are provided without discussion.

I would not recommend this to all botanists, but if you make extensive use of digital projections during lectures, many of the animations and images would be marvelous teaching aids. This CD would also be useful to introductory biology/botany students looking for concise summaries when studying. Despite problems, this is the most useful CD that I have seen as a learning tool in biology. It really does illustrate many basic concepts in elegant and digestible ways. The challenge for authors and publishers will be to use this model and then to improve on it. — David Garbary, Department of Biology, St. Francis Xavier University, Antigonish, Nova Scotia, B2G 2W5.



Green Plants: their Origin and Diversity 2nd ed. Bell, Peter R. and Alan R. Hemsley. 2000. ISBN 0-521-64673-1 (Paper US\$31.95) 349 pp. Cambridge University Press, 40 West 20th Street. New York, NY 10011-4211. - First of all, the authors are to be congratulated for making the effort to update a general plant morphology book in this era of DNA technology! The comprehensive *Morphology of Plants and Fungi* by Bold, Alexopoulos and Delevoryas, last revised in 1989, is now out of print, and admirable though Gifford and Foster's *Morphology and Evolution of Vascular Plants* is, it is too restricted to serve as the main text in a "survey of the plant kingdom" type of class.

The format follows that of the first edition: An introductory chapter outlining general features of the plant kingdom, followed by three chapters on the algae, organizes according to the major photosynthetic pigments, one chapter on bryophytes and four on vascular land plants.

The useful summary of characters preceding the treatment of each division has been retained, as well as the Suggestions for Further Reading for each chapter.

An additional section on the origin of the eukaryotic condition has been added to the introductory chapter; this expounds an interesting (if not generally accepted) autochthonous origin of plastids. Much recent cladistic work has been used to revise the taxonomic treatments, so that all land plants belong to the subkingdom Embryophyta, the vascular plants are treated as a single division, Tracheophyta, the lycopsids with their lateral sporangia are sister to all remaining vascular plants, and both the ferns and horsetails are derived, together with the seed plants, from the trimerophyte line. The psilophytes are treated as an order of ferns, and the heterosporous aquatic ferns as the single order Hydropteridales. Seed plants are accorded their own subdivision (as are the lycopsids and the horsetails plus ferns) with each of the major seed plant lines treated at the level of class, except the angiosperms, which are treated as two separate classes, the Magnoliopsida and the Liliopsida. The treatment of fossil material has been somewhat amplified, and the names of time periods revised. The Suggestions for Further Reading for each chapter have been updated as well.

A few problems remain from the first edition; there is no discussion of the origin of the seed plant stele nor was the glossary revised. Terms such as phragmoplast, phycoplast, leptosporangium, microphyll and megaphyll, used in the description of classes, and clamydosperm and anthophyte used to describe lineages, are nowhere explicitly defined. Furthermore, the authors' use of terms is sometimes unusual and sometimes inconsistent. For example, they include all oxygenic photosynthetic organisms, even those that are prokaryotic, in the kingdom Plantae. The term pteridosperm some times is equivalent to their class Lyginopteropsida (ie Paleozoic forms) and sometimes used in the usual, more general sense that includes the Mesozoic forms. The term gymnosperm is sometimes used to mean non-angiosperm seed plant and sometimes to mean archegoniate seed plant (i.e. non-anthophyte). Flower is defined so as to include the reproductive structures of Gnetopsida and possibly some of the Mesozoic seed ferns, yet in some places the text uses flowering plant and angiosperm synonymously, as is more general usage.

Although the Suggestions for Further Reading are updated, there are a few areas where the material in the new references is not incorporated into the text's discussion. In particular, the ultrastructural and nucleic acid sequence data indicating the polyphyly of the chlorophyll a & b and chlorophyll a & c -containing groups of algae is glossed over, and the arguably very important work of Friedman on double fertilization in the Gnetopsida is not described.

My students complained bitterly throughout the semester that they could not understand the book. My first inclination was to dismiss the criticism, since I sometimes think they would complain that a comic book was too

difficult if I assigned it for class. However, going back over the book for this review, I decided that there are a number of places where the clarity of the text could be improved. For example, the discussion of red algal life cycles would be improved by the equivalent for Polysiphonia of the outline and sketch of the life cycle of Ectocarpus presented in Figures 4.14 and 4.15. In fact, similar life cycles would also be useful review for the bryophytes and pteridophytes, particularly the heterosporous forms usually omitted from introductory courses. Clarity would be improved overall if the class characters and ordinal characters were more consistently and explicitly explained. The representative genus approach is traditional in morphology texts, but I found myself constantly referring to other works to determine whether a particular feature was characteristic of a class, an order, or of the particular genus being described. For example the statement: "The Jungermanniales and the Metzgeriales...contain both leafy and thalloid forms." is of course true as it stands but surely obscures the fact that Jungermanniales has essentially only leafy forms and Metzgeriales fundamentally thalloid ones.

Table 6.1 and figure 6.5 were particularly confusing for teaching. Figure 6.5 has several taxa nested within other taxa of the same rank. All the ferns are considered to belong to the class Polypodiopsida, yet Table 6.1 uses Eusporangiatae and Leptosporangiatae (i.e., terms using old class endings) to group orders. Why not use the current subclass rank? A better alternative still would be to use the purely descriptive terms "eusporangiate ferns" and "leptosporangiate ferns" since the former are united only by the lack of the evolutionary novelty leptosporangia. As indicated above, the basis for grouping classes of seed plants is not adequately described. Admittedly, how to handle the entirely fossil groups of Mesozoic seed plants is a question no one has adequately resolved. Finally, I find it hard to be comfortable with a classification where monocots differ from dicots at the same rank either differs from pines or pines from cycads!

Overall, the book is very useful as the principal text in a survey course in plant morphology, The authors are to be commended and I look forward to a third edition. - Alicia Lesnikowska, Georgia Southwestern State University, Americus GA.



Wetland Ecology Principles and Conservation.

Keddy, P. A. 2000. ISBN 0-521-78367-4 (paper US\$2.95) ISBN 0-521-78001-2 (hardback US\$140.00) 614 pp. Cambridge University Press, Cambridge, UK. - This text is the latest arrival in the excellent Cambridge Studies in Ecology series, and accordingly represents a critical review aimed at advanced undergraduates, graduate students and professional researchers. The author's expertise in wetland ecology is impressive and represents more than 25 years of research in this area, including innovative contributions to studies of competition, assembly rules and conservation. Thus, this book provides a comprehensive, thorough and up-to-date coverage of the current state of ecological knowledge for wetland systems. The book's readability is smooth with lucid presentations of all topics, avoidance of unnecessary jargon and the efficient use of uncomplicated figures and tables to emphasize major points. I found it enjoyable to read and easy to comprehend. The references have been carefully and appropriately selected. Most citations date from the 1980's and 1990's, but a few older works are cited as appropriate. Therefore, this review provides a perspective that emphasizes and summarizes relatively recent research.

The book is organized logically into three parts. Part one is an overview of the basic properties of wetlands where definitions, functions and wetland classification (chapter 1), zonation and succession (chapter 2) and diversity (chapter 3) are presented. Part two (chapters 4-9) treats the ecological factors controlling these wetland properties. This section is where crucial topics such as hydrology, disturbance and competition are discussed. The third part (chapters 10-12) provides a look into the future of wetlands with insightful discussions of wetland restoration and conservation.

The wetland overview is superb. First, a concise definition of wetlands is given that emphasizes both ecological and evolutionary aspects. This practical definition is then compared to various legal definitions in an interesting manner that discloses the author's distaste for unnecessary "word play". This short encounter clearly sets the mood for the rest of the book which presents all topics in a practical, non-sense manner. This common sense approach is soon again evident in the discussion of wetland classification which presents six "basic types" (swamp, marsh, bog, fen, wet meadow, shallow water) in preference over systems that emphasize locational rather than functional equivalency (e.g., the widely used Cowardin system), or the finely graded hierarchical European "etum" systems that "...detracts from more important work, and at worst, simply creates confusion by distorting plant names and making work in wetlands obscure to all but a narrow group of experts." I've often felt the same way, but I'm glad that somebody else has come out and said it. I particularly liked the section on adaptations to flooding which is categorized as "the primary constraint". This is not just a token addition, but represents about 18 pages devoted to an excellent overview of the subject. The section on wetland functions is also effectively

summarized with good examples. Here you will discover many things about wetland functions including how much Potamogeton is found in turtle stomachs and the emission rate of methane from bogs. Part one concludes with a grim description of threats to the Pantanal, one of earth's largest wetlands. These two pages compel the reader to finish the book in order to learn what should and can be done to avert such dire environmental consequences through wise management strategies.

The first part concludes with a description of biotic and abiotic factors contributing to zonation and succession. Relevant models and theory are reviewed and the role of competition is emphasized using examples from quantitative empirical studies. Next follows a section on wetland biodiversity, the factors controlling it, biomass and conservation of diversity. Suffice to say that this section also presents a remarkably succinct yet insightful overview.

The second part of the book comprises essential ecological topics, i.e. those factors controlling wetland properties. This part begins with hydrology using examples ranging from rivers to potholes and peatlands. The importance of hydrology as the controlling force in wetland characteristics is emphasized by analogy to fire as a controlling agent for forest characteristics. Wetland fertility is then explored as a second key controlling factor. The disturbance chapter nicely weaves a transition between properties and examples of disturbance, seed bank regeneration and gap dynamics. The section on competition was surprisingly brief (only 35 pp.), but does successfully present a rather complete overview of how one tests for competition (said to be "a ubiquitous process in wetland plant communities") and how various constraints operate on competition.

The last quarter or so of the book is devoted to wetland restoration and conservation. Here, Keddy encourages the reader to proceed beyond simply realizing "how the patterns and species in wetlands are produced by multiple environmental factors acting simultaneously" and to learn how to effectively manage wetland systems using this knowledge. His emphasis is on the application of assembly rules where principles of evolutionary ecology are applied to determine how species with particular traits will pass through various environmental filters. Thus, there is a logical transition here from the filters (most notably hydrology, fertility, salinity and disturbance) which are discussed in the second part of the book, and the application of their understanding to wetland restoration. Keddy also recommends adoption of a functional approach to simplify the complex ecological interactions that occur in wetlands. His description of how this goal may be achieved points to much needed research in this area.

The book concludes with a chapter on wetland conservation and again conveys a surprising amount of insightful information in relatively few pages. The empha-

sis is on the formulation of priorities and the assessment of performance in meeting conservation goals. As already stated on the back cover of the book ("Advance praise for *Wetland Ecology*" by M. Bertness), this is "the best treatment yet available". I agree.

After reading this book, you will feel as though you have been infused with information from several volumes rather than just one. I was impressed by the remarkable way that Keddy conveyed essential information without a lot of unnecessary detail or superfluity. As a result, most people with an appropriate background should be able to gain an outstanding grasp of modern wetland ecology, within just a few short days of easy reading. Certainly, this aspect will make *Wetland Ecology* an outstanding textbook, and it certainly should be considered by everyone who teaches a course in this area. - Donald H. Les, Department of Ecology & Evolutionary Biology, University of Connecticut, Storrs, CT 06269-3043.

African Traditional Medicine: A Dictionary of Plant Use and Applications. Neuwinger, H.D. 2000. ISBN 3-88763-086-6 (Cloth DM 198) 589 pp. Medpharm GmbH Scientific Publishers, Birkenwaldstrasse 44, 70191 Stuttgart, Germany. - Indigenous and local peoples, especially in Africa, hold significant levels of knowledge about their lands and resources, little known to the rest of the world. African Traditional Medicine is a compendium that bears a comprehensive and magnificent witness to the perspectives of traditional people about healing practices with plants.

The author asserts, in the first sentence of his introduction, that this book is purely a reference book. Plants are arranged alphabetically by their scientific names. All the important medicinal plants and most of those of only local use or minor importance are included. However, information about active principles has been consistently omitted: that is not the purpose of this book.

This dictionary, the first of its kind, seems to be reasonably inclusive, as far as the number of species covered. The sources consulted to prepare this compilation are primarily scientific journal entries and monographs. The literature cited draws upon most of the standard reference works. Neuwinger points out that many of the written texts he cites exist in limited editions and are difficult to find outside Africa. He commended, particularly, the excellent research of Adjanooun, Aké Assi and their collaborators on indigenous plants in the French-speaking countries of West Africa. Published sources are supplemented occasionally, but not consistently, with information from herbarium labels.

Neuwinger conceived of this reference work mainly for scientists working the fields of phytochemistry and pharmaceutical chemistry, searching for medicinally active plants for further research. It will certainly be of interest to botanists, anthropologists and ethnobotanists.

Inevitably any work of this magnitude will have small flaws. Several citations within a botanical entry are missing from the list of references. It would be helpful to add volume and page numbers to each author's name in the body of the text, to assist the reader to retrieve the citation. As it stands now, the author's name alone is given, while the References sometimes cite multiple entries, and the user cannot distinguish the correct one without checking each record. This can be a serious problem especially in the event that a user wants to request a citation by interlibrary loan, if the sources are not available locally.

At current exchange rate of \$1=2.27 DM, the price of the book seems quite reasonable. It is well bound for long-term use, and has a comfortable size. Bound separately, there is a supplemental pamphlet called

African Traditional Medicine: Search System for Diseases, wherein one can search for disease conditions listed alphabetically, from abdominal pain and abortifacient, to yaws and yellow fever. - Dorothea Bedigian, Department of Biology, Washington University, St. Louis, MO.

Domestication of Plants in the Old World. (3rd ed) Zohary, Daniel and Maria Hopf. 2001. ISBN 0-19-850357-1 (Cloth US\$75.00) ISBN 0-19-850356-3. (Paper US\$34.95) 316pp. Oxford University Press, 198 Madison Avenue, New York, NY 10016-4314. - Domestication of Plants in the Old World provides a review of the origin and the spread of cultivated plants in southwest Asia, Europe and Africa north of the Sahara, the classical 'Old World'. The aim is to trace plant domestication and crop plant evolution from its early beginnings up to classical times.

The context from which this book emerged is stated in the preface to 1st edition: Southwest Asia, Europe and the Nile valley are unique today for the vast extent of archaeo-botanical exploration. Hundreds of Mesolithic, Neolithic and Bronze Age sites have been excavated. Plant remains in many sites have been expertly identified, culturally associated, and radiocarbon-dated, and the finds have given critical information on the plants that started agriculture in this part of the world.

Considerable progress has also been achieved in field of wild ancestry of Old World crops. The wild progenitors of most cultivated plants have now been satisfactorily identified, both by comparative morphology and by genetic analyses. The distribution and ecological ranges of the wild relatives have been established, and comparisons between wild types and their cultivated counterparts have revealed the evolutionary changes that were brought about by domestication.

As a result of these achievements, SW Asia, Europe and Egypt emerge as the first major geographic area in the world in which the combined evidence from archaeology and the living plants permits a modern synthesis of crop plant evolution. This book presents that record.

The authors are preeminently qualified to this task. Daniel Zohary, professor emeritus from the Department of Evolution Systematics and Ecology, Hebrew University of Jerusalem and Maria Hopf, formerly head of the botany department, Römisch-Germanisches Zentralmuseum, Mainz, have devoted their careers to these questions. Hence this is the most thoroughly researched text addressing crucial questions about origins of agriculture in the Near East: defining a crop's progenitor, and evidence central to domestication. Zohary and Hopf have taken time to analyze data and results from field, greenhouse and laboratory research in preparing their summaries of each crop species.

The book opens with a brief discussion about sources of evidence for the origin and spread of cultivated plants. Table 1 [p. 2] outlines these sources succinctly. Thereafter, the treatment is crop by crop, arranged by type: cereals, pulses, oil and fibre crops, fruit trees and nuts, vegetables and tubers, condiments, dye crops. The final chapter consists of a valuable review of plant remains in representative archaeological sites, arranged by country. As knowledge on collection from the wild has increased substantially in the last few years, the chapter on 'Fruit collected from the wild' that appeared in the earlier editions was omitted here, because the authors felt that that subject deserves to be treated separately.

This 3rd edition substantially updates the previous editions, [2nd edition 1994; 1st edition 1988] by consideration of new information from sources such as the 'Harlan Symposium', The Origins of Agriculture and Crop Domestication, held in May 1997 at ICARDA headquarters in Tell Hadya, Syria. Also worthy of note is their modification of their text discussing evidence from Harappa, to include sesame.

Zohary and Hopf have accepted the subject of the Indian origin of sesame, after thorough examination of the evidence, despite the fact that many authors continue to publish verbatim, the views of Purseglove [1962] and other out-of-date sources. Fuller's [2000] most important review: Fifty years of archaeobotanical studies in India,

brings the readers up to date with an appraisal of the evidence.

Any work of this magnitude is bound to have a few slips. I could not find the citation to one of the sources on page 141 in the References. The index is brief, and misses several mentions of their keywords that are found in the text, a loss of some information. But these are picky details. Overall, this book is a masterpiece, well illustrated with photographs, line drawings and maps. The 45-page bibliography is a treasure house of information. It is worth every penny of the price, and belongs in the libraries of botanists, anthropologists, geographers, and every university. - Dorothea Bedigian Biology Department, Washington University, St. Louis, MO.

Roadside Use of Native Plants. Bonnie Harper-Lore and Maggie Wilson, eds. 2000. ISBN 1-55963-837-0. (paper, \$25.) 665 pp. Island Press, P.O.Box 7, Covelo, CA 95428. - This is a facsimile edition of a publication (FHWA-EP-99-014) by the U.S. Department of Transportation, Federal Highway Administration, 1999. It is well that Island Press has made this publication more widely and easily available. I know because last year as librarian for the New England Wild Flower Society I had tried to obtain it and failed. In fact, then, even knowing of its existence was dependent on seeing a chance citation. The authors are well qualified. Bonnie Harper-Lore is a vegetation specialist for the Federal Highway Administration and Maggie Wilson is a biologist for the U.S. Environmental Protection Agency. They have compiled a great deal of scattered information on the subject to produce this very useful handbook.

As John Kartesz writes in his preface, over the past decades the philosophy of roadside maintenance has changed drastically from maintaining a front lawn appearance, labor intensive and requiring use of herbicides, to a more reasonable aesthetic and ecological approach. As early as the 1930's in Illinois a group known as Friends of the Native Landscape was formed under Jens Jensen a noted Midwestern landscape architect. They approached the Illinois Department of Highways with ideas. In 1936 Jesse M. Bennett wrote *Roadsides, the Front Yard of the Nation* in which he urged that states aim to approach a natural condition in their roadside landscaping. Texas adopted this approach early on. In 1965 The Highway Beautification Act was passed under Ladybird Johnson's influence. In 1969 The National Environmental Policy Act encouraged "environmentally sensitive solutions" to highway landscaping. In 1987 the Surface Transportation and Uniform Relocation Assistance Act included "the requirement to plant native wildflowers with 1/4 of 1% of a highway project's landscape budget when federal funds

are used.”

The authors note that in spite of the STURAA Act of 1987, by 1994 only 38 states had program level support for native wildflowers. In 1998 the government issued revised and extended guidelines for the native wildflower planting requirement of the 1987 Act. Old and new policy stated that at least one quarter of one percent of funds expended for landscaping must include wildflowers. This established a minimum but states were encouraged always to include more native plants in their highway landscaping efforts. The efforts of “Operation Wildflower” a program developed in the early 1970’s by the National Council of State Garden Clubs in cooperation with State highway agencies were still welcomed. In 1994 President Clinton issued an Executive Memorandum on “environmentally and economically beneficial landscaping.” Finally in 1999, in recognition of the growing importance of controlling invasive species that might be used in the above planting requirements, President Clinton issued an Executive Order calling for a National Invasive Species Council and increased communication between all agencies concerning wildflower plantings.

Some states with good native plant highway programs are Texas, Iowa, Wisconsin, Illinois, Minnesota, Utah, Oregon and Florida. As noted above in 1994 only 38 states had good programs. But the list continues to grow. On July 27, 2001, the Christian Science Monitor had an article “Let it grow? Arkansas debates roadside vegetation.” The 1998 guidance revisions for the STURAA Act of 1987 were published to encourage more states to work out programs and this Federal Highway Administration publication, *Roadside Use of Native Plants* followed in 1999 to give more hands-on information and practical suggestions for highway planners and project managers in all states.

The book starts with 18 essays on “Roadside Restoration and Management.” Most important perhaps is the definition of a native plant as accepted in this legislation. “A native plant species is one ‘that occurs naturally in a particular region, state, ecosystem, and habitat without direct or indirect human actions’.” In “What is Native” Larry Morse of the Nature Conservancy elaborates on this definition. Other essays are on “Preserving Roadside habitats...,” various aspects of plant communities, various management tools, and finally “Introducing a Roadside Land Ethic”.

The bulk of the book contains state-by-state comprehensive lists of native plants for landscape use including ferns, grasses, forbs, shrubs, and trees. Maria Urice of the National Wildflower Research Center in Texas compiled these, quite an undertaking. The only other such lists that I have seen are those in the *Landscape Restoration Handbook* by Donald A. Harker, Lewis Press. They are regional and not as lengthy. A black and white map of potential natural vegetation zones accompanies each state. These are adapted from A. W. Kuchler’s *Potential Natural Vegetation Map*, 1964, revised 1985 and printed in the U. S. Geological Survey’s *National Atlas of the U.S.* The maps are reproduced again in the center of the book, this time in color. This is the first time that I have seen such extensive

use of these interesting and informative maps. Kuchler’s vegetation zones are shown and the dominant plant species in each zone are listed in Appendix B. Finally the state listed federally endangered species are given. Other resources given for each state include recommended floras, botanical experts to contact, and organizations: the Natural Heritage office, The Nature Conservancy field office, the state native plant society if there is one, similar associations, and botanical gardens or arboreta; contact botanists at the state university; for information on weeds and invasive plants the local state department of Agriculture. The organization addresses and contact personnel names are as up-to-date as is possible and the resource lists are very complete. For example at the New England Wild Flower Society I have maintained for years a comprehensive list of native plant societies. I added two new ones from this book. Appendices include text and discussion of the legislation mentioned above. There is a description and discussion of The American Treeways Initiative, started in 1992. This is a lesser-known program. I would like to have seen more information on Operation Wildflower with contact addresses, and a contact address in each state for the state highway administration and the local Federal Highway Administration office. This is the only type of resource information I found lacking.

Roadside Use of Native Plants is a handbook that gathers together information on the subject from many scattered sources and aims to give, to any organization or person needing it, help in making site-specific decisions affecting wildflower or native plant planting programs along American highways. Hopefully it will encourage more of such work at the state as well as at the federal level. - Mary M. Walker, librarian emeritus, New England Wild Flower Society, Framingham, MA 01701.

The Ghosts of Evolution: Nonsensical Fruit, Missing Partners, and other Ecological Anachronisms. Barlow, Connie. 2001. ISBN 0-465-00551-9 (Paper US\$26.00) 224 pp. Basic Books, 10 East 52nd St., New York, NY 10025. - Connie Barlow’s newest work of popular science non-fiction is a paean to the megafaunal dispersal syndrome, a theory that invokes the selective pressures of large, extinct herbivores to explain “overbuilt”, seemingly non-adaptive plant morphologies, such as massive, non-dispersible fruit [see D. H. Janzen and P. S. Martin, *Science* 215: 19 (1982)]. Accordingly, her exploration of this theory is not a critical analysis but a well-referenced description of it. She states her apparent mission at the end of the first chapter by saying, “Adaptive just-so stories are sometimes a more prudent response to an evolutionary puzzle than to throw one’s hands up... Sometimes it is prudent to hypothesize that the trait in question is, at least to some degree, anachronistic, and

then to search for missing partners.” In ten chapters, Barlow investigates the possible origins of non-adaptive traits in plants with reference to primary literature, personal interviews with well-respected botanists and paleontologists and her own informal experiments. Both Drs. Janzen and Martin critically reviewed the manuscript. Multiple line drawings and photographs illustrate the text, although they were not included in the advance uncorrected proof used for this review.

The breadth of examples used by the author is laudable for its coverage of both temperate and tropical plants. This makes her subject matter relevant or at least familiar to a wide audience. For example, Ms. Barlow writes in depth about the distribution, life history and fruit dispersal characteristics of *Gleditsia triacanthos* and *Gymnocladus dioica* but also those of *Crescentia alata* and *Balanites wilsoniana*, to name a few. Combined with her descriptions of botanical anachronisms are summaries of published studies concerning herbivore food choice and migratory behavior. Included, and much appreciated by this botanist/correspondent, is a primer on the differing digestive physiologies of mammalian herbivores. She highlights her esoteric journey through botany and zoology with a variety of tangentially related gems such as the advantages of camel ranching and the possible origin of human geophagy. The author’s writing style reflects an openly anthropomorphic view of natural history; although this may help her readers empathize with her ultimate motive for writing the book.

Her motive, of course, is not to chronicle odd plant traits or their possible culprits; it is to illustrate the powerful idea that extinction is followed by the loss of ecological balance. The author devotes the last two chapters drawing connections between the ecological consequences of past extinctions and the current, accelerated rate of species extinctions due to human activity. However, the equally important converse of this thesis may be lost on a general pop-science audience due to the author’s failure to rigorously explain what evolution actually *is*. She outlines evolution in one paragraph in the second chapter and justifies using teleological language in later discussions of evolution by suggesting, “We all know what we mean.” This offhand claim is presumptuous. Without an adequate explanation of the role of random variation and natural selection in evolution, she can never fully describe the sobering *difference* between the Pleistocene extinction and the present day one: that in our rapidly changing world individual species have very little time to respond to selection and, therefore, are more prone to dying off. Despite this shortcoming, Barlow’s new work tills fertile ground for pop-science fans and plant lovers alike. - Andrea Weeks, Section of Integrative Biology, University of Texas.

Breeding Ornamental Plants. Dorothy J. Callaway and M. Brett Callaway (eds). Timber Press 2000. ISBN 0-88192-482-2. 323 pages. - Many gardeners or plant enthusiasts become so enamored with a group of plants they have grown successfully and with pleasure that they begin to think seriously about breeding the perfect variety or cultivar themselves. It is for this audience that *Breeding Ornamental Plants* is intended. It contains information on fifteen different groups of ornamental plants: African violets, amaryllis, ornamental aroids, daffodils, daylilies, gesneriads, hostas, kalmias, lilacs, magnolias, oaks, penstemons, rhododendrons and azaleas, Siberian irises. While it is hard to imagine that any one person will be deeply interested in breeding more than one of these groups, it is helpful to have introductory information about all in one single volume.

In one of two introductory chapters the essential basics of plant breeding genetics (Mendelian) and polyploidy are explained at a level intended to enhance the confidence of amateurs who undertake a breeding program. A second introductory chapter deals with practical matters such as how to plan a crossing program and emphasizes the importance of keeping good records. In a section I found especially interesting, the rules of naming and the increasingly complicated issues of plant patents and trademarks of daylilies was reviewed.

For each group of plants, experienced breeders were asked to address the important traits and breeding objectives, hybridization mechanics and propagation. The amount of detail and general readability of the chapters is variable. For some groups a long history of the breeding of the group is provided while for others such as penstemons and oaks, history remains to be made. The detailed mechanics of crossing the individual plants is made clear for all groups, though some previous familiarity with the plants involved may be helpful to understanding the specifics. A strength of the book is the detailed list of resources at the end of each chapter. This includes important collections, suppliers, registration authorities and plant societies as well as references to the literature. Addresses, phone numbers and website addresses should be more than enough to get a neophyte started. This book would be a useful reference for anyone who decides to embark on the adventure of plant breeding. - Joanne M. Sharpe, Coastal Maine Botanical Gardens, Boothbay, ME 04537.



Trees: Their Natural History. Peter Thomas, 2000. ISBN 0-521-45963 (paper \$24.95). 286 pp. Cambridge University Press, The Edinburgh Building, Cambridge CB2, 2RU, United Kingdom. - Trees are common, woody plants that enhance and beautify landscapes. They are essential to many ecosystems and provide humans with lumber, pulp, paper, cork, fuel, fabrics, spices, dyes, and drugs as well as symbolic and commemorative uses (Christmas trees). Yet many of us are not very familiar with their modular makeup, function, reproductive strategies, growth forms and defense mechanisms? Peter Thomas' book attempts to bridge that knowledge gap by providing a comprehensive overview about how trees grow, die and cope with their surroundings.

This book focuses on the two largest groups of trees, the conifers and dicotyledons, although other trees belonging to the gymnosperms (*Ginkgo*, *Gnetum* and cycads) and monocotyledons (palms, Joshua tree) are discussed. Throughout the text, Thomas commonly cites examples of trees that grow in England, but he also refers to other tree species from around the world including tropical rainforests of the Amazon, African savannas, pine forests of Canada, and temperate areas of North America. The numerous examples with reference to England are probably related to his teaching and research experience at Keele University in the United Kingdom.

The book is well organized and divided into nine chapters. Thomas begins with a brief account of trees treating such aspects as their appearance in the geologic record, their value to humans and how they differ from animals. The next three chapters give a general account of the modular makeup of trees with chapter two addressing the anatomy, function and variability of leaves. Chapter three discusses woody skeletons and barks of trunks and branches, and chapter four discusses types of roots and how they contribute to growth and health. These chapters are filled with fun, interesting, and valuable facts that are often excluded from typical botanical textbooks. For example, Thomas describes how roots of oaks and poplars can rapidly expand laterally, absorb water quickly, and cause ground subsidence and building damage in urban areas if the soil happens to be clay rich. Interesting and humorous analogies are commonly used throughout these chapters. For example, 1) pillar roots of a strangler fig are compared to a boa constrictor slowly killing its host, 2) the hydraulic architectures of trees are related to children sucking different size straws in competition for a drink, and 3) new leaf growth, stimulating senescence of older leaves in evergreen species, is compared to older tenants who don't pay their rent.

Chapters 5 through 9 relate to reproductive strategies, growth, and defense of trees. Flower pollination, the development of fruit, and seed dispersal are main topics of chapter 5. Special attention is given to when and how often mast years can occur for various trees and why wind pollination is more common for trees that grow in temperate forests than in tropical forests. Chapters 6 and 7 pertain to the growing tree and tree shapes. Topics include growth

rates, factors that limit tree size, phenology, the importance of dendrochronology and how tree shape changes with age. Strategies associated with seed dormancy, size and germination represent the themes of Chapter 8. The concluding chapter relates strategies used by trees in defense against fungal attacks, herbivory, cold, heat, wind and pollution. One interesting section explains how giant sequoia trees (*Sequoiadendron giganteum*) of western North America withstand and survive the heat of great forest fires whereas other trees including American beech trees (*Fagus grandifolia*) readily succumb to fires.

Throughout the text, Thomas presents informative tables, clear photographs and detailed illustrations. Each chapter concludes with a valuable list of references (most from the 1990's). The book also contains a useful index that adds to its value as a reference. This text, however, could not be used as a field guide because it lacks needed color photographs, paragraph descriptions, and familial references to genera and species of trees.

Written for the layman, this book is somewhat rigorous in its treatment. A background course in general botany would be helpful in understanding many concepts and terms that are discussed throughout the text. Many students, faculty and researchers in the fields of forestry, horticulture, botany and environmental science will find this book to be a worthy addition to their reference collection. For me, I also intend to illustrate my botany lectures with enlightening examples borrowed from this text. -Nina L. Baghai-Riding, Department of Biological and Environmental Sciences, Delta State University, Cleveland, MS 38733

Aroids: Plants of the Arum Family, 2nd ed. Brown, Deni. 2000. ISBN 0-88192-485-7 (Cloth US\$34.95) 392 pp. Timber Press, Inc., 133 S.W. Second Avenue, Suite 450, Portland, OR 97204-3527. - "Aroids" flies far above many academically oriented books. Many such works are full of turgid prose, and even if the subject falls in the reader's area of specialty, reading can be a chore. Instead, this book breezes through genus after genus, presenting a thorough review of the latest information on this important family.

Aroids is a refreshing exception to the rule in part because of its structure. Written with an easy flow and packed with fascinating and useful facts, this book reviews the family Araceae, the family of skunk cabbage and *Amorphophallus*, jack-in-the-pulpit and philodendron. With the wide variation for many different characters present in the Araceae, and given the number of genera with which the author deals, the reader might be easily overwhelmed. However, the author skillfully breaks the chapters into sections of no more than a few pages, dealing with no more than two or three genera per section and usually only one.

The overall structure of the book is simple, as an introduction to aroids whets the reader's appetite, leading to a chapter on details of the fascinating reproductive methods of the Araceae. Then, the family is considered

according to habitat, including various types such as woodland, aquatic, and arid areas, with the genera found in each area considered. Taxonomic details are included, e.g. tribal associations, though the book remains quite readable even through the more technical paragraphs. Along the way, interesting points abound, such as consideration of the wide range of odors, from rotting flesh to mint, and the variation in floral details, from the minute duckweeds to the anus-mimicking *Heicodicerus muscivorus*, or dead horse arum. The Titan arums receive their own chapter, followed by considerations of aroids as food and the toxicity of various species, this family including many toxic members. Finally, appendices consider aroids in cultivation and then give a checklist of the genera of the Araceae and a good glossary and set of references.

This second edition takes into account the many taxonomic revisions and discoveries which have taken place in the twelve years since the first edition. Interestingly, with the taxonomic revisions of the last decade, the Araceae now includes the largest- and smallest-flowered plants that are known. This family has long contained the largest-flowered plant, tropical giant *Amorphophallus titanarum*, so often trumpeted on the news when a rare bloom opens in a botanical garden. Now, the Lemnaceae has been reunited to the Araceae, 100 years after they were first split. *Wolffia*, the world's smallest flowering genus containing the smallest-flowered plant is again in the fold.

Aroids Plants of the Arum Family is a wonderful book for anyone who wants to delve into this family, and it belongs in any college or university library. Any amateur interested in plants, not just those who are amateur botanists, will find this book hard to close. Those who teach botany will find a wealth of facts to entertain and excite students, along with a useful source of information for explaining *Amorphophallus* the next time that it makes the news. Buy a copy today. – Douglas Darnowski, Department of Biology, Washington College, Chesterton, MD 21620.

The European Garden Flora. Volume VI. Edited by The European Garden Flora Editorial Committee. 2000. ISBN 0-521-42097-0 (hardcover US\$175.00) 739 pp. Cambridge University Press, 40 West 20th Street, New York, NY 10011-4211, USA. – The European Garden Flora (1984-2000) is a monumental manual for the identification of cultivated ornamental species, and many hybrids, in 242 families of angiosperms. About 25,000 species are included. This concluding volume presents accounts of 38 families of dicotyledons, including the largest family of flowering plants, Compositae (with 190 out of 1530 genera included). Other horticulturally important families covered by this volume are Acanthaceae, Apocynaceae, Bignoniaceae, Boraginaceae, Buddlejaceae, Campanulaceae, Caprifoliaceae, Convolvulaceae, Gentianaceae, Labiatae, Rubiaceae, Scrophulariaceae, Solanaceae, and Verbenaceae. This volume also contains a key to all dicotyledonous families of ornamental plants culti-

vated in the temperate regions.

Based on my experience with this volume and previous ones, the identification keys are excellent, and while the species descriptions are short, they are sufficient and accurate. How useful is this European Flora in North America? Just a random sample: Three out of four *Vitex* species listed in McClintock & Leider (1979) and Meyer *et al.* (1993) are here. As listed in the same sources, all four species of *Catalpa*, all four species of *Coprosma* and all six species of *Cestrum* are here. Four out of seven species of *Clerodendrum*, one out of two *Lycium*, 11 out of 13 *Buddleja*, and 20 out of 22 *Lonicera* species are in the Flora. Conclusion: The European Garden Flora is useful even in North America. Nevertheless, other sources should be consulted as well, especially in the southern states.

I have only two complaints. The first is a shortage of illustrations (only 44 figures in this volume). To some extent, many references made to published illustrations compensate for this weakness. The second is the absence of references to the degree of naturalization or invasiveness of species like *Buddleja davidii*, *Calystegia pulchra*, *Lonicera japonica*, *Rudbeckia laciniata*, *Solidago gigantea*, *Tragopogon porrifolius*, or *Vinca major* (see Clement & Foster, 1994). However, these are just minor problems. This manual is a milestone that will provide a wealth of taxonomic and practical information for decades to come. – Marcel Rejmánek, Section of Evolution and Ecology, University of California, Davis, CA 95616.

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Meyer, F.G., Mazzeo, P.M. and Voss, D.H. 1993. A Catalog of Cultivated Woody Plants of the Southeastern United States. U.S. Department of Agriculture, Agricultural Research Service, U.S. National Arboretum Contribution No. 7.

Wildflowers of the Fairest Cape. Peter Goldblatt and John Manning. 2000. ISBN 0-620-24787-8 (paper US\$34.95) 316 pp. Timber Press, 133 S.W. Second Avenue, Suite 450, Portland, OR 97204-3527. “Wildflowers...” stuns the reader, presenting an almost-bewildering profusion of brightly colored wildflowers from western half of the Cape Floral Kingdom. The Cape Floral Kingdom is of course the smallest of the floral kingdoms, but like the southwest of Western Australia, it has very high rates of endemism. Both of those areas also share Mediterranean climates, a profusion of shrubs, and the

presence of some families, such as the Proteaceae.

The authors begin by describing the various regions within the Cape Botanical Province, followed by an excellent table that indicates the months that are best for viewing wildflowers in different areas. These regional descriptions are brief but interesting, allowing the reader to form a reasonable picture of local vegetation. The authors then present a very large number of excellent photographs of various species of wildflowers, preceded by a simple key to families.

With the very large number of species present in the area considered, the authors have to limit the total number of plants pictured. Since the vibrant colors of the flowers are also shown, that is a further limitation—the cost of producing such a book is high, even when limiting the number of species shown.

For example, the Roridulaceae is omitted. The plants are subcarnivorous, trapping insects but obtaining nutrients from their prey via the feces of other insects. This family, known only from South Africa, contains two species, one of which grows near Hermanus in the general area covered by *Wildflowers of Fairest Cape* (Gibson R, 1999, Flora and Veldt, 85: 189). Its inclusion, since this is an unusual family with a fascinating ecological story, would have been more appropriate, even if that meant omitting instead one member of an already well illustrated family.

At the end of the text and before the Index is a section in which the families that are represented are described along with each illustrated species from that family. The species are helpfully numbered for ready access to their pictures in the main body of the book. More information in each description would be helpful, though the length of the descriptions is understandable given the goal of illustrating the range of species and the cost of producing such a book with so many photographs.

One annoying point is the lack of the family name on pages other than the first page mentioning that family. Some families occupy a number of pages, and confusion may result with genera with which the reader is not immediately familiar.

In spite of any small flaws, *Wildflowers of the Fairest Cape* would make an excellent addition to any professional library, and the gorgeous photographs would be a useful tool for exciting students about plants in general, areas of endemism, and certain unusual species. For example, in the Cape Kingdom grows *Disa uniflora*, an orchid whose seeds are notable for germinating without tissue culture or fungal symbionts. All college and university libraries should have a copy, and anyone intending to visit South Africa, especially if they intend to see wildflowers, would do well to use this valuable resource. It will complement two other works of recent years, Peter Thompson's more horticultural *The Looking Glass Garden* (Timber Press) and, illustrating fewer species but with more information on particular areas, Colin Paterson-Jones' *The Cape Floral Kingdom* (New Holland).—Douglas Darnowski, Washington College, Chesterton, MD 21620.

Succulent Flora of Southern Africa. Court, Doreen. 2000 ISBN 90-5809-323-9 (cloth EUR75.00) 300 pp A.A. Balkema B.V., Postbus 1675, 3000 BR Rotterdam, The Netherlands. - Doreen Court's revised edition of her 1981 original text is a solid improvement. The original text was already a classic in the realm of succulent books, and this revision is a much-anticipated update. This expanded revision has several notable additions: newer maps that reflect the reorganization of South Africa's provinces, better graphics and photographic plates, and a more scientific approach to the systematics of the families included. An example of the latter can be found in Chapter 2 (Portulacaceae), in which Ms. Court summarizes recent research on the genus *Anacampseros* while not favoring one argument or the other. This approach is found throughout the text, and gives the reader a balanced view of the different perspectives of the researchers involved in these genera.

The author covers members of the families Mesembryanthemaceae sensu Ihlenfeldt and Straka, Portulacaceae, Crassulaceae, Euphorbiaceae, Apocynaceae, Passifloraceae, Stapelieae, and Aloaceae. For each chapter, Ms. Court provides a synopsis of recent work in the systematics of each, either by information gathered through personal communications with researchers or by using recently published articles. These synopses are more than adequate for the casual reader, but academic researchers may want a bit more detail; for example, the systematics of Aloaceae (Chapter 7) has been heavily researched in the last decade by authors such as Van Jaarsveld, Reynolds, and Viljoen, but these authors are not mentioned.

This revised text includes a very thorough tour of the major succulent families found in southern Africa. The author does state in the preface that the goal of this text is to cover those families in which the majority of genera are succulents rather than those families with only a few succulent genera, and that goal is achieved. If this text has one weakness, it is that exclusion of those several other families with notable succulent members present in southern Africa, such as *Senecio* (Asteraceae) and *Pelargonium* (Geraniaceae).

Overall, this text is a large step in the Researchers with a particular interest in the genera examined in this text may not always agree with Ms. Court's presentation of the material, but no one can deny that this text is a much needed breath of fresh air, and that it should be on the bookshelves of succulent plant lovers everywhere, whether academic or otherwise. — Vic Landrum, Department of Biology, Washburn University, Topeka, KS 66621.

Trees of Indiana. Wampler, F. (paintings by M. Wampler). 2000. ISBN 0-253-32885-3 (hardcover US\$ 49.05) xxiv + 152 pp. (incl. 72 plates). Indiana University Press, 601 North Morton Street, Bloomington, IN 47404-3797 (www.indiana.edu/~iupress) — This is a coffee table book of watercolors of trees native to Indiana, along with accompanying text. Seventy two 2-page spreads treat 84 of the more than 150 tree species native to the state. Most of the trees covered are common ones in Indiana statewide or regionally, but some interesting rarities, like the spectacular yellowwood (*Cladrastis lutea*), are also included. Each plate emphasizes a single species, but 11 of them also include a visual detail and a little text on a related species as well (with 2 extra hickories on plate 24). Each spread consists of a painting of an open grown tree in an Indiana landscape and detailed paintings of leaves, twigs, flowers, and fruits. Most of the time the habit painting occupies a whole page while the details share the facing page with the text, but in 20 plates the details have the large format and the habit shrinks to leave room for the text.

The paintings of details are generally superb, and it is worth getting the book for these by themselves. I am not so enamored of the habit paintings, although they are pretty, with their varied coloration due to the seasons and stages of phenology portrayed. However, they mostly just look like big, round, open-grown trees with a certain fuzziness that precludes getting a real sense of the foliage. None of them have the crispness of the detailed paintings which are, in fact, botanical art of the quality emphasized by the Hunt Institute, the Missouri Botanical Garden, or the Royal Botanic Garden, Kew, among others. The habit paintings, on the other hand, also disappoint because, with a few exceptions like the paper birch, there is no real impression of the distinctive barks of the different species. Nonetheless, they do provide visual appeal and a reasonable feeling for the appearance of the tree in the landscape.

The text accompanying the plates ranges from about 500 to 700 words. It is well written in plain language that accurately describes a wide range of characteristics of each species and enhances interest in them. Surprisingly, perhaps, there is little information presented on the distributions and habitats of these trees in Indiana specifically, for which the reader can turn to Charles Deam's *Trees of Indiana* (3rd edition, 1953), or to tree books with a wider geographical coverage. Most of the species presented here, of course, are widely distributed and common across temperate eastern North America. That holds for many hawthorns (*Crataegus*) and serviceberries (*Amelanchier*) also, but these two genera, as is so often the case with *Crataegus* in tree books, are each given a generic entry without reference to any particular species. Yet the paintings are made from collected material. In the case of the serviceberry, if the detail paintings were made from a tree form like the one in the habit painting, they can only be *A. arborea*. The hawthorns are harder but it would have been possible to choose one of the distinctive species, like *C. crus-galli* or *C. punctata* to paint.

Since very few tree books do justice to *Crataegus*, the fact that this one doesn't is of little moment. It is, after all,

a selection, and a good one, of the common trees of Indiana. It can be enjoyed for its lively text, evocative paintings of trees in the landscape, and very impressive portrayal of botanical characters in the elegant detail paintings. — James E. Eckenwalder, Department of Botany, University of Toronto, 25 Willcocks St., Toronto, Ont. M5S 3B2.

The Multimedia Toolkit for Educators in the Plant Sciences CD-ROM. Clayton, Mike. (\$100.00 US). Order online (www.wisc.edu/botany/) or by mail: the University of Wisconsin-Madison, Department of Botany, Attn: Mike Clayton, 430 Lincoln Dr., Madison, WI 53706, USA. - One stop shopping. This CD provides the complete set of tools (images and content-files in computer ready format) needed to quickly and fully develop the laboratory materials, needed for an introductory botany course. This CD includes a teaching-reference collection of 1,900 images (JPEG) illustrating the full range of topics (Cyanobacteria to Angiosperm) presented in a botany course (both lecture and lab). Though many of the images and files included on this CD (603.5MB for 6,218 items) were developed to support an introductory course at the University of Wisconsin (BOT 130, General Botany). These computer-ready materials can be easily adapted for use in a variety of plant biology courses "stressing evolutionary sequences and the relationship between structure and function at succeeding levels of organization: molecule, cell, organism, population, community" (undergraduate catalog, University of Wisconsin).

This CD also includes a prepared laboratory manual presenting 25 separate topics, from Plant Morphology and Tree Identification (Topic 1) to Fruits and Root, Stem and Leaf Adaptations (Topic 25). These laboratory hand-outs may be printed and duplicated for your student's use. In addition, a set of web-based lessons that can be added to your own course's web-page, and "interactive slides" (ex. the stages of meiosis) that you can use "as is" or "as models" for your own interactive course materials are included. More importantly, both the lab manual and the web-based lessons are also provided in file-formats that can be modified to meet your specific teaching objectives and requirements. The purchase of the CD permits you to directly use up to 50 images from the teaching-reference collection in your own course page. There are also hundreds of other images associated with the available HTML-based lessons that can be used in your course-pages in the context of the HTML-lessons included on the CD.

The many teaching materials (images, HTML-lessons, laboratory activities, and source files) provided on this CD represent the contribution (directly and indirectly) of 21 separate Botanists (in the broadest sense). They are a polished and coherent set of educational materials (text and pictures) that can be used immediately by faculty and students to associate the diversity of evolved plant structures with their adaptive functions. These same materials can also be used as a refined source of teaching materials in our own courses at institutions (which are

likely not as resource-rich as the University of Wisconsin's Department of Botany). At a fair cost of \$100.00, I especially recommend that department's purchase a copy of this CD in support of their undergraduate curriculum and their faculty's efforts to properly use computer technology in instruction.

This disk, which worked on both Apple and PC computers, supplies many attractive and appropriate photographs (typically in color). The inclusion of Portfolio Browser software (5.0) made finding the right image easy. However, the hardware and software requirements for the browser software likely limit its use with computers manufactured and sold in the last five years (Apple: OS 8.1 or higher, PowerPC processor, a minimum of 6MB RAM, displaying thousands of colors and Quicktime 4.0 strongly recommended & PC: Windows 95 or higher, Pentium 133MHz or compatible, 32MB RAM, displaying thousands of colors and Quicktime 4.0 strongly recommended). Because the images were saved at the resolution level (72 dpi) intended for viewing on a computer monitor (or video projection from a computer) they lost sharpness only when intentionally enlarged above 100%. If viewed at the intended size, the images were both sharp and bright. This minor technical limitation (72 dpi) might be addressed in future editions of the toolkit as the resolving ability of computer monitors and video projectors improves. - Martin G. Kelly, Department of Biology, Buffalo State College, Buffalo, NY 14222

Penguin Dictionary of Plant Sciences, 2nd edition. Edited by Jill Bailey. Penguin Books, 27 Wright's Lane, London W8 5TZ, England. 1999. ISBN 0-14-051403-1. 504 pp. -I especially value scientific dictionaries. I often recommend that students buy (and keep) one as their first professional reference book, rather than rely on textbook glossaries which are gone and forgotten, when the text is not kept by the student. More importantly, a science dictionary, if used across a set of courses, can help a student make intellectual connections across the curriculum. The back-cover of this book indicates that the Penguin Dictionary of Plant Sciences, 2nd edition is a substantially revised edition of The Penguin Dictionary of Botany. That this revision was motivated by "rapid developments in the fields of taxonomy, biotechnology, and laboratory techniques". That it contains 4,000 entries (600 new), extensive rewriting of many definitions, and adoption (in 1999!) of the five Kingdom system of classification.

Based on my examination and evaluation of the Penguin Dictionary of Plant Sciences, I consider this a valuable reference for scientists and graduate students in the plant sciences. I think that this dictionary's style and readability would limit its appeal to (and use by) interested lay readers and most undergraduate students in biological sciences for the following reasons.

My first impression of the dictionary is how few illustrations (all line drawings) are presented. There are 72 sets of figures. One set of figures is presented

roughly every seven pages of text. What is especially notable (in a dictionary of plant science), is that 30 sets of figures represent either a chemical structure or chemical pathway. It is troubling that so few figures are used to make the point being described, and that fully 42% of these figures illustrate chemistry rather than structure. I doubt that this dictionary would visually interest most students or be as attractive as the publisher hopes it will be.

In order to evaluate the content of the Penguin Dictionary of Plant Sciences, I randomly selected one defined term per letter of the alphabet (using a random number generator). When the random number exceeded the total number of entries (for a letter), I evaluated the last defined term in that set. I examined the definitions for the following terms (allopolyploidy, biological clock, capillitium, day length, Embden-Meyerhof-Parnas pathway, field theory, giant ferns, heterokaryon, internode, juvenility, kymograph, lectotype, mannan, nyctinasty, osmosis, phaeoplast, quinone fungicide, raceme, saccharose, tetraspore, utricle, vesicle, WorldWide Fund for Nature, xylose, yellows, & zymase). I found that the definitions for these terms were usually both complete and correct with the following exceptions (capillitium - structure's location vague, giant ferns - requires knowledge of descriptive terms for ferns, quinone fungicide - quinone not defined, & WorldWide Fund for Nature - not explained in the context of plant science).

In order to evaluate the readability of the text, I scanned two pages 358 and 359, and used the readability analysis provided by my word processing software. Readability scores provide information about the reading level of the document based on the average number of syllables per word and the number of words per sentence. These two pages provided 1,010 words and 60 sentences for analysis. The "Flesch reading ease" score rates text on a 100-point scale. As this score increases, it is easier to read and understand the text. For most standard documents, the goal is to have a "reading ease score" around 65; the randomly selected text from the Penguin Dictionary of Plant Sciences had a "reading ease score" of 39.5. The "Flesch-Kincaid grade level score" rates text on the needed reading skills for a typical U.S. school student (K-12) in a specific grade. For most standard documents, the goal is to have a "grade level score" around 7-8; the randomly selected text from this dictionary had a "grade level score" of 11.8.

To determine if these limitations are specific to the Penguin Dictionary of Plant Sciences, it would be useful to compare this plant science dictionary to the few others currently in print (Dictionary of Plant Science, Oxford Paperback Reference Series & Dictionary of Botany, Wordsworth Reference; Plant Identification Terminology: An Illustrated Guide, Spring Lake Publishing), as well as more general dictionaries of biology (Penguin Dictionary of Biology; A Dictionary of Biology, Oxford Paperback Reference Series) - Martin G. Kelly, Department of Biology, Buffalo State College, Buffalo, NY 14222.

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The Botany of Desire: A Plant's-Eye View of the World. Pollan, Michael. 2001. ISBN 0-375-50129-0 (Cloth US\$24.95) 271 pp. Random House, 299 Park Avenue, New York, NY 10171.

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DNA-Based Markers in Plants, 2nd ed. Phillips, Ronald L. and Indra K. Vasil. 2001. ISBN 0-7923-6865-7 (Cloth US\$188.00) 512 pp. Kluwer Academic Publishers, P.O. Box 989, 3300 AZ Dordrecht, The Netherlands.

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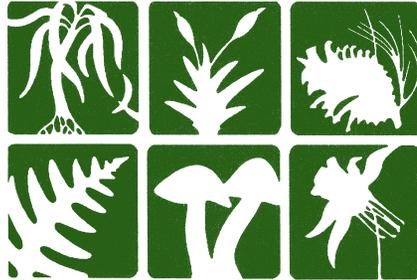
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