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AN EXTERNAL COMMUNICATION AUDIT
OF THE NATIONAL TROPICAL BOTANICAL GARDEN

by
Jennifer Melody Peay Murdock

A thesis submitted to the faculty of
Brigham Young University
in partial fulfillment of the requirements for the degree of

Master of Arts

Department of Communications

Brigham Young University

April 2003

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BRIGHAM YOUNG UNIVERSITY

GRADUATE COMMITTEE APPROVAL

of a thesis submitted by

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This thesis has been read by each member of the following graduate committee and by majority vote has been found satisfactory.

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ABSTRACT

AN EXTERNAL COMMUNICATION AUDIT OF THE NATIONAL TROPICAL BOTANICAL GARDEN

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Department of Communications

Master of Arts

This study presents the results of an external communication audit of the National Tropical Botanical Garden (NTBG), a congressionally chartered nonprofit organization dedicated to the conservation of tropical plant diversity. Information was gathered during the communication audit through interviews with NTBG's key decision makers, content analyses of NTBG's primary publications, and a questionnaire measuring the public-organization relationship.

The audit assesses NTBG's external communication policies, practices, capabilities, and needs in the context of systems theory and external relations strategic planning theories. The findings of the audit identify who NTBG considers its target publics and how well they are reaching certain audiences. The results also indicate in which areas NTBG's current communication system is meeting or not meeting the objectives of the organization. The study concludes with a series of recommendations for how NTBG can improve its external communication system.

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AN EXTERNAL COMMUNICATION AUDIT OF THE NATIONAL TROPICAL BOTANICAL GARDEN

CHAPTER 1 INTRODUCTION

The National Tropical Botanical Garden (NTBG) is a congressionally authorized nonprofit organization dedicated to the conservation of tropical plant diversity, particularly rare and endangered species. Established in 1964, NTBG includes four gardens and three preserves in Hawaii and one in south Florida. The sites total more than 1,600 acres. The organization primarily focuses on scientific research, plant exploration, propagation, and education.

In recent years, NTBG botanists, horticulturists, and educators have contributed significantly to their fields. They have assembled what is believed to be the largest collection of federally-listed endangered plant species in the world and made more than 1,200 plant exploration trips throughout the Pacific Islands. NTBG's staff of research scientists has been recognized for developing pioneering propagation techniques and growing protocols for more than 45% of the existing Hawaiian flora, including 248 rare and endangered species. They are also responsible for the establishment of the world's most comprehensive collection of breadfruit cultivars and new techniques developed to restore tropical dry forests, one of the world's most endangered ecosystems.

NTBG spreads its message through various types of external communication including a Web site, a magazine, brochures, newsletters, and other publications. The research questions answered in this thesis address whether NTBG's external

communication materials are meeting specific objectives and goals for each publication and for the organization as a whole. More specifically, the research questions include:

1. Is NTBG's external communication system reaching its target publics?
2. Are the target publics receiving the intended messages?
3. Are the communication messages achieving the objectives of the organization?
4. What can be done to improve communication not effectively reaching the targeted publics?
5. And, are there new methods of communication that need to be developed, adapted, or eliminated to meet organizational objectives or to target different audiences?

To help answer these questions, the researcher consulted systems theory, an organizational theory that takes a holistic view of an organization's communication structure. Using systems theory as a framework, a communication audit was conducted on NTBG's external communications. A communication audit is defined as a

Complete analysis of an organization's communications—internal and/or external—designed to 'take a picture' of communication needs, policies, practices, and capabilities, and to uncover necessary data to allow top management to make informed, economical decisions about future objectives of the organization's communication (Kopec, 1982, p. 24).

The NTBG audit followed several steps to answer the research questions including specific methods of interviewing, content analysis, and audience survey. Findings are reviewed to develop recommendations for NTBG's future external communication plans.

Literature Review

Systems Theory

Conducting a communication audit requires the researcher to take a broad view of an organization's communication system. A branch of organizational theory, called systems theory, provides a framework for a holistic study of a communication system (Cragan & Shields, 1998; McQuail, 2000; Daniels, Spiker, & Papa, 1997). The system is the total unit or organization being examined, but it is made up of many subsystems that can be defined differently according to one's purpose (Downs, 1988). This theoretical approach studies the environment and suprasystem that the organization may function in and their effects on communication. Systems theory is a "radical departure from many other organizational concepts because it stresses the universality of organizational principles and the interdependence of all systems" (Bivins, 1992, p. 366). Its unique value also comes from its emphasis on process as an organizing principle.

Systems theory has made several important contributions to the ability to conduct meaningful communication audits (Downs, 1988). The theory was originally developed by philosophers in the nineteenth century and expanded upon by researchers from many fields in the twentieth century. The development of the theory signified a new awareness of systems relationships as opposed to simple cause and effect relationships (Hamilton, 1987). Bertalanffy (1956, 1968) is known as the father of General Systems Theory, which he first published in the 1950s. Bertalanffy "wanted to develop a set of concepts and principles that would apply generally to any type of system" (Daniels, Spiker, & Papa, 1997, p. 44). His theory became the groundwork for theorists March and Simon (1958), Weick (1969), Huse and Bowditch (1973), Katz and Kahn (1978), and Monge (1982).

Systems theory uses the analogy of a living organism to represent organizations and organizational communication (Trujillo & Toth, 1987; Griffen, 1997). Challenging the traditional view of scientific and classical scholars of organizations as machines, system theorists stress that organizations, like living organisms, experience birth, development, and death (Daniels, Spiker, & Papa, 1997). “They [organizations] are dynamic entities that act in purposeful ways” (p. 44). Systems theory relies on four primary concepts that explain the organismic characteristics of organizations: wholeness, hierarchy, openness, and feedback.

Wholeness implies that all elements in a system are bound together and interdependent. The “effect of elements working in relationship to one another differs from the effect on their isolated, individual actions taken collectively” (p. 44). This is also often referred to as synergy—when the whole is greater than the sum of the parts.

Hierarchy implies that the relationships within a system are organized by hierarchical rules. Elements are formed into subsystems, which relate to one another and make up the whole system, which itself operates within a larger environment. For example, in an organization, the elements are the employees, the subsystems could be departments, groups, or divisions, and the system is the entire organization (p. 45).

Openness refers to whether a system is labeled open or closed. In an open system, communication enables the organization to sense its environment and to adapt to whatever changes are taking place. The system “interacts freely with the environment in terms of trying to change or modify it” (Downs, 1988, p. 40). On the other hand, a closed system is insulated and has impermeable boundaries. It does not react to and is not influenced by the environment.

Feedback is information sought by the system to determine the effects of the output (Bivins, 1992). Negative feedback indicates deviation from desired conditions and results in organizational adjustments. Positive feedback, in contrast, reinforces deviations rather than signaling for a correction. It is used to create new system conditions rather than maintain old ones (Daniels, Spiker, & Papa, 1997). “Continuous feedback loops allow organizational systems to coordinate and adjust activities to maintain balance and promote survival” (Bivins, 1992, p. 366).

Many scholars have used systems theory as a base to form new, similar organizational communication theories; the most noteworthy is Weick (1969, 1976, 1977, 1989; Weick & Browning, 1991). His work “offers a socio-cultural evolution model of organizing that has been among the most important influences in development of modern organizational study” (Bantz, 1989, p. 231). Weick is recognized for developing Weick’s Organizing Theory (WOT), also referred to as Equivocality Reduction Theory. WOT explains the organizing process as the attempt to reduce the amount of equivocality faced by humans. Weick asserted that humans act in accord with Darwin’s notion of the survival of the fittest and strive to find the best strategies to overcome equivocality, which he described as information with many levels of meaning due to ambiguity, complexity, and obscurity (Weick, 1979). Weick explained that people overcome equivocality by sharing the best kind of information to help get their work done (Cragan & Shields, 1998). Weick also assumed that organizations try to optimize the amount of equivocal information, so that they can work at an optimal level. They do this by identifying appropriate assembly rules and cycles (Weick, 1979). Finally, similar to General Systems Theory, Weick’s theory assumes that organizing occurs within an open

information system requiring the use of positive and negative feedback loops from humans engaged in interacts and double interacts. “Thus, feedback loops help identify the assembly rules and cycles that optimize the level of equivocality that organizing humans face” (Cragan & Shields, 1998, p. 249).

Weick’s theory has been and still is a major component of organizational communications studies. Bantz (1989) wrote a complimentary article describing in great detail the impact of twenty years of Weick’s research on the field of organizational research. Bantz referred to Weick as a “truly influential organizational theorist” (p. 231). Putnam and Sorenson (1982) expanded on Weick’s concept of equivocal messages in organizations. They used Weick’s model to measure the number of rules, the number of people, and the frequencies of message categories generated in two organizations. They concluded that “since some degree of equivocality is present in all organizational outputs (Weick, 1979), the way individuals interpret and process this ambiguity is a key to understanding how organizations make sense of their activities” (p. 114). Putnam (1989) also used Weick’s Organizing Theory in a study about negotiation and organizing. Sproule (1989) juxtaposed some of Weick’s ideas in his article discussing organizational rhetoric and the public sphere. He presented a very unique perspective as he analyzed how both Weick’s organizing and traditional rhetorical theory straddle the public and private spheres.

Weick’s theory, along with several other subsystems’ theories, has helped strengthen and broaden applications of general systems theory. However, there are some critics, such as Creedon (1993), who presented a unique perspective in her feminist analysis of systems theory. She finds a clear absence of a feminist perspective in the

application of systems theory and in the unifying paradigm for public relations. She suggested that systems theory fails to acknowledge the existence of a third system that supports organizational efforts to achieve homeostasis, balance, or symmetry in subsystem interactions. Yet, other scholars, such as McPhee and Zaug (2001), found new applications for systems theory arguing that the three traditions of theory about organizational communication have special relevance to the ideas of problematic integration theory and offer a redirection of traditional themes in communication theory.

Generally speaking, systems theory has stood the test of time and is still being applied by both communication and organizational theorists and researchers. Nevertheless, there is still room for further development and application considering how rapidly technology is changing the way organizational communication systems operate.

Looking beyond its theoretical perspective, general systems theory lends itself to a methodology called the communication audit. Systems theory drives the audit procedure because it conditions the researcher to take a holistic look at the organization being audited. It stresses the interdependence of subsystems by taking into account all parts of the whole and how they each affect and rely on each other. “The systems perspective calls attention to the way things are related, and it underscores the fact that the isolation of any one variable often distorts one’s perceptions” (Downs, 1988, p. 39). For example, in a general audit, researchers may examine a total system, but they also examine its parts or subsystems “such as the performance review subsystem, the quality circle subsystem, the suggestion subsystem, and the various publications that form another subsystem” (p. 39).

Systems theory also suggests that a system is the culmination of a transformational process of *input*, *throughput*, and *output* (Bivins, 1992). In terms of external relations, *input* is the information from the environment that allows the subsystem of external relations to identify threats to the system's stability or equilibrium; *throughput* is the process of organizing the inputs and formulating responses; and *output* is released into the environment as external relations communication or action in an attempt to restore equilibrium (Bivins, 1992). The other important process of the communication system is feedback, which in external relations terms refers to the "information sought by the system to determine the effects of the output" (p. 366). The communication audit is generally designed to address all of these transformational processes. The NTBG audit used interviews to measure the organization's external relations input and throughput, content analysis to measure the output, and audience questionnaires to measure feedback.

The Communication Audit

Literature addressing communication audits is predominantly found in public relations, business, and organizational communication journals and books. The earliest literature relating to communication audits dates back to the early 1950s. Davis (1953) reported a method for analyzing and reporting communication patterns in organizations. His approach was called ecco analysis and focused on timing, subject matter, media, and organizational level as communication pattern variables (p. 301). Ecco analysis was tested on an operating business organization and resulted in concrete and useful information about communication patterns. Davis reported ecco analysis as the first

method to use a simple questionnaire to gather large quantities of organizational communication data. Davis also reported that the framework and method of ecco analysis appeared to be adaptable to various types of organizations and to both management and operative groups (p. 308).

In 1954, Odiorne was the first to use the term *communication audit* in academic literature. His research focused on accuracy and direction of communication. His study relied on a communication audit devised by the National Society of Professional Engineers. Odiorne used both a questionnaire and interviews to gather data from top managers and project engineers. Although his focus was limited to a “particular organization at a particular moment” (p. 235), he paved the way for future researchers to expand the scope and function of the communication audit.

The most expansive communication audit to date was devised by the International Communication Association (ICA) in the 1970s (Scott et al., 1999). “Termed the *ICA Audit*, the system evolved through three phases: development of audit procedure and instruments (1971–1974); pilot-testing of audit procedure and instruments (1974–1976); and implementation of audit procedure and data bank (1976–)” (Shelby & Reinsch, 1996, p. 97). The five audit instruments developed to increase breadth of information and validate data were: survey, interviews, network analysis, critical-incident analysis, and communication diary.

Because of its elaborate design and complexity, the ICA Audit usually takes a large team of researchers several months to complete. Goldhaber and Krivonos (1977) discuss timeframe limitations as well as other strengths and weaknesses in their article addressing the process, status, and critique of the ICA Audit. One primary limitation

noted is the almost unavoidable fact that a successful audit is dependent on strong commitment and cooperation from the organization (pp. 52–53), an idea echoed by Sincoff and Goyer (1977).

Brooks, Siegerdt, and Callicoa (1979) also published an assessment of the ICA audit. They studied the techniques and results of sixteen organization communication audits. They concluded without reservation, “the audits resulted in perceived favorable changes in communication effectiveness” (p. 135). They offered three explanations for the ICA Audit success. First, the presence of the audit itself made the organization more aware and perceptive of its communication problems, processes, and behaviors. Second, the participation of employees in the audit made them more interested in the outcome and more willing to accept and implement recommendations. Third, the companies who benefited most from the audits were those most supportive throughout the entire process and most willing to cooperate with auditors. Those organizations that didn’t feel they had any serious “communication needs” made very little use of the audit results and carried on as before (p. 135).

Since the early 1970s, many researchers have used the ICA Audit as a framework for more simplified audit plans (Roberts & O’Reilly 1974; Goldhaber 1977, 1979a, 1979b; Goldhaber & Krivonos 1977; Goldhaber, Denniss, Richetto, & Wiio, 1979; Greenbaum 1972, 1974; Greenbaum, Hellweg, & Falcione 1988). Perhaps most well known among communication audit scholars, Goldhaber and Greenbaum each published books and several articles in the 1970s and 1980s addressing communication audits. They are both recognized for developing and refining audit instruments.

Greenbaum (1972) discussed management's responsibilities for organizational communication systems. He advocated that management "design, create, and maintain a communication system that increases the probability of greater organizational effectiveness" (p. 39). Two years later, Greenbaum (1974) expanded on his work and introduced his own organizational communication audit. Similar to the ICA audit, Greenbaum's analysis process follows steps, or what he calls "stages." First is fact finding, which involves studying the organization unit in terms of functional relationships, personnel characteristics, and situational factors; identifying communication system controls, and taking a complete inventory of communication activities (pp. 745–746). The second stage is analysis, which entails classifying communication policies and activities in terms of communication networks to gain a greater understanding of the communication system and using appropriate measurement methods to obtain data that reflect the achievement level of communication network objectives (p. 746). In the third stage, evaluation and reporting, Greenbaum suggested arriving at conclusions concerning the weaknesses and strengths of the overall system and discussing them with management at the appropriate level. He then advised researchers to finalize conclusions and submit a report indicating areas of effectiveness and efficiency, and recommendation for communication systems changes (p. 746).

Greenbaum pointed out the rarity and importance of conducting communication audits. He reported that it's unusual to find an organization that attempts to manage all phases of communication as a functional activity and even more unusual to "encounter an organization that performs periodic and formal appraisals of the general communication system for the purpose of maintaining and developing the effectiveness of this vital

interaction-influence function” (1974, p. 740). He concluded emphasizing the key to performing successful audits: “The successful development of a communication audit program is closely dependent upon the nature of organization policies, staff personnel capabilities, and the level of general organization development. Organizations presently able to cope with other progressive management systems should find that communication management is a natural step forward” (p. 753).

Greenbaum, Hellweg, and Facione (1988) published a synopsis of thirty years of literature produced about organizational communication evaluation, covering 1950 to 1981. Their purpose was to classify and examine the rationale of organizational communication evaluation studies, noting communication problems, findings, and conclusions. Their work is an extensive and very thorough overview that, unfortunately, has not been replicated or updated since 1988.

In addition to being recognized for developing his own audit technique and contributing to the most extensive audit literature review to date, Greenbaum is also known as the first researcher to link systems theory (Ruben, 1972; Katz and Kahn, 1978; Weick, 1969) to communication audits. “His [Greenbaum’s] approach to communication auditing has encouraged researchers to use analysis of the overall system to inform their investigation of specific communication activities” (Shelby & Reinsch, 1996, pp. 97–98).

Goldhaber also supported systems theory as a framework for audits (1979) and noted that “such an approach permits questions from two different viewpoints”:

- (1) How well is the entire communication system working? and does the communication system have the elements required to achieve objectives?
- and (2) What are the efficiency and effectiveness of specific activities?

and which activities require support and what is the nature of that requirement? (pp. 342–343).

Goldhaber’s questions are similar to general research questions addressed in this communication audit of NTBG. Are external communication messages reaching target publics? Are the messages achieving the objectives of the organization? Can the communication messages reach organizational objectives under current practices? What can be done to help those messages not meeting objectives? And, are there new methods of communication that need to be developed, adapted, or eliminated to meet organizational objectives or to target different audiences?

Since Goldhaber and Greenbaum, several other notable communication audit researchers have been recognized: Finnish scholars Wiio (1974, 1978, 1980; Wiio & Helsila, 1974) and Helsila (1971; Wiio & Helsila, 1974), and American scholar Downs (1988). Wiio and Helsila developed a relatively comprehensive audit approach called LTT, after the Finnish title for Helsinki Research Institute for Business Economics. Similar to the ICA Audit, the LTT has been criticized for its lengthiness to complete, but is still recognized as an important development in communication audit formation. Like previous audits, the LTT’s primary purpose is to diagnose what is wrong with the communication system so improvements may be recommended (Lewis, 1987). The LTT has also been described as a “low-cost standardized instrument consisting of seventy-five questions, developed to measure the communication climate in organizations” (Greenbaum, Hellweg, & Falcione, 1988, p. 306). Wiio eventually took the results of the LTT audit and created a new audit called the Organizational Communication Development Procedure (OCD). The OCD offered a “standardized procedure so that

results from one organization can be compared with results from other organizations” (Greenbaum, Hellweg, & Falcione, 1988, p. 307). Wiio (1977) described his OCD as a participatory development system, wherein members of the organization are expected to take an active role in the process, and feedback is an integral part of the process (pp. 14–17). Although both the LTT and OCD were developed in Europe, most researchers believe they are valid for use in U.S. organizations because the concepts they measure are “universal to most organizational systems” (Goldhaber, Denniss, Richetto, & Wiio, 1979, p. 257).

Downs (1988) wrote one of the first books presenting a simplified, comprehensive look at how communication audits may be conducted. He outlined multiple research techniques including iterations of a number of ICA Audit tools and helped auditors choose what works best with each individual situation or organization. Although there have been similar books published (Lewis, 1987; Hamilton, 1987), most researchers since 1988 refer to Downs’ book as the best reference available. The NTBG audit presented here closely follows methodology and techniques outlined by Downs.

Peer-reviewed articles focusing on communication audits are few, especially in the last decade, and seem primarily to rely on former research and frameworks developed in the 1970s and 1980s (Barnett, Hamlin, & Danowski, 1982; DeWine, & James, 1988; Ellis, Barker, Potter, & Pridgeon, 1993) One of the most recent articles, by Kazoleas and Wright (2001), looked at developing and implementing the communication audit building on the ICA Audit and Wiio’s (1977) organizational communication survey. The authors presented a new model for developing and implementing an internal communication audit using organizational communication and public relations theory. The primary

difference between their model and former models is a “greater level of receiver involvement” (p. 474). Kazoleas and Wright designed a new survey that allows the audience to have more choice over the function that each communication vehicle serves. Kazoleas and Wright not only introduced new literature to a somewhat stagnant area of research, but also attempted to bridge what they consider a growing gap between “academic research and the needs of public relations practitioners” (p. 471). Other scholars point out that this gap may be caused by the nature of what is addressed in the communication audit—it is often private information (Sincoff & Goyer, 1977). Thus, there is a major limitation to finding and publishing journal articles with examples of audit results.

Few organizations will allow the findings of their audits to be made public—after all, they usually pay a good price for the audit to be conducted. As a result, audits have been more of a business function than a research topic. With few exceptions, the trend seems to be more toward profitable consulting than developing new communications research. Perhaps this explains why most of the literature available is found in business texts and journals designed to guide practitioners rather than scholars.

Another trend that has taken place over the last few years is the use of communication audits as an educational tool. Putnam and Ford (1990) and Conaway (1994) were among the first to publish articles advocating the use of the communication audit in the classroom. Since then, *Business Communication Quarterly* ran extensive research reports in 1996 (Shelby & Reinsch) and 1999 (Scott et al.) explaining the value of communication audits in business management classrooms. These more current authors describe audits as a pedagogical tool used to give students real-world experience

as they conduct audits. Such literature is valuable because it outlines the process that other graduate students have taken conducting similar audits to the intended NTBG audit.

Although the frameworks and methods developed more than a decade ago seem to work well, there is still need for future research to reexamine the audit process in light of recent technological developments. Only one researcher has attempted to link the communication audit to modern technology. Gayeski (2000) recommends following a communication audit with an information systems analysis (ISA). The ISA “involves an expert review of the processes, systems, tools, and templates that are used to exchange information in the organization” (p. 28). The objective is to provide a set of helpful recommendations to improve systems performance.

More and varied validated measurement instruments need to be developed as part of the communication audit. Current auditors are forced to try fitting new technology such as Internet and email into old methodology. A revision seems logical. It is also important to note that communication audits may focus on internal and/or external communication efforts. Internal communication is generally defined as interoffice communication: memos, phone calls, emails, newsletters, interviews, etc. External communication is defined as electronic or print publication materials designed for an audience outside of the organization, even though they may also be circulated internally. Examples include: Web sites, newsletters, magazines, brochures, letters, etc.

Because the focus of the NTBG communication audit is on external communication, the literature has been carefully examined to assure the information is relevant to external communication audits. Although the majority of audit literature

focuses on internal organizational communication and behavior, the literature referenced in this review has relevance to external communication audits.

Public Relations Measurements and Strategic Planning

Public relations literature, in addition to organizational literature, frequently makes reference to the communication audit as a measurement tool used to assess the effectiveness of public relations practices (Seitel, 1992; Newsom, Turk, & Kruckeberg, 1996; Wimmer & Dominick, 2000; Kazoleas & Wright, 2001). Occasionally, researchers make reference to the public relations audit (Wimmer & Dominick, 2000). However, generally speaking, the public relations audit is very similar and can be used interchangeably with the communication audit. Other terms mentioned by public relations professionals that usually refer to an analysis process similar to the communication audit include “opinion audit” and “publicity analysis” (Newsom, Turk, & Kruckeberg, 1996).

Newsom, Turk, and Kruckeberg (1996) pointed out the use of the communication audit before a change in the organization to establish a benchmark or baseline against which subsequent results can be measured. They also offered two interesting models presenting organizational communication patterns and audit techniques (See Appendix A). Seitel (1992) pointed out the use of the audit as benchmarks as well as examples of useful information an audit can provide. These public relations professionals explained the audit can help solve problems such as: “bottlenecked information flows; employees working at cross purposes; hidden information within an organization that is not being used, to the detriment of the institution; and conflicting or nonexistent notions about what

the organization is and does” (pp. 153–154). The authors also suggested that the most effective audits start with a researcher who is: “(1) familiar with the organization, (2) generally understands the attitudes of the target public toward the organization, (3) recognizes the issues of concern to the target public, and (4) understands the relative power of the target public vis-à-vis other publics” (p. 154).

Wimmer and Dominick (2000) presented a simple and clear outline of how a public relations/communication audit should proceed. The first step is to list the segments of the public that are most important to the organization. This is generally accomplished by “interviews with key management personnel” in each department and by a content analysis of the organization’s external communications (p. 367). The second step is to determine how the organization is viewed by each of the key audiences. This involves conducting a survey and administering it to samples of the audiences. “The questions are designed to measure familiarity with the organization . . . as well as attitudes and perceptions toward it” (p. 367). Validated questionnaires have been designed for such measurement (Kreps, 1989; Bruning, & Ledingham, 1999; Kim, 2000b), but these instruments are generally not linked to the communication audit process. They are presented in public relations literature as instruments to measure the organizational-public relationship. Such measurement instruments are a natural fit in the communication audit process. The NTBG audit combines one such questionnaire (Kim, 2001b), as part of the communication audit process.

Kim’s study (2001b) presented a validated questionnaire with sixteen questions addressing trust, commitment, local or community involvement, and reputation. Kim took a comprehensive look at the theoretical background of the organization-public

relationship. In a discussion on how to measure the relationship, Kim discussed the importance of using systems theory as a framework. Kim also helped define the organization-public relationship:

This study conceptualizes the organization-public relationship as the public's perceptions toward the organization that attempts to establish or maintain the long-term positive relationship with the public. The public's perceptions toward the organization are the essence of the organization-public relationship (p. 813).

Kim's study finalized a valid and reliable four-dimension scale for measuring the organization-public relationship. He concluded that the "results demonstrate that the scale is valid for other kinds of samples" (p. 799).

Bruning and Ledingham (1999) also presented a multi-dimensional organization-public relationship scale designed to align public relations programs with relationship goals (p. 165). Although not as recent, Kreps' article (1989) also presented a six-step cyclic model of therapeutic organizational communication consultation. Steps include: (1) collaboration, (2) data-gathering, (3) feedback and diagnosis, (4) intervention planning, (5) intervention implementation, and (6) intervention evaluation. In sync with public relations professionals' beliefs and with the goals of a communication audit, Kreps wrote:

The ability to gather information about the critical reactions relevant others have about organizational behaviors enables members to evaluate the relative effectiveness of messages sent and to develop appropriate communication strategies for future interactions to best achieve individual and organizational goals (p. 4).

Some public relations scholars credit Ferguson (1984) for identifying the “public relationship as a new paradigm of public relations” (Kim, 2001, p. 7; Ledingham & Bruning, 1998, p.56). Since Ferguson, the shift to a stronger focus on the organizational relationship is apparent in much of public relations literature. Broom, Casey, and Ritchey (1997) discussed the limitations to public relations research because of the varied definitions of the organization-public relationship. To help solve this problem, the authors posited a theoretical model for constructing theory about public-organization relationships. Ledingham and Bruning (Ledingham & Bruning, 1998, 2001; Bruning & Ledingham, 1999) have recently published articles addressing the dimensions of an organizational-public relationship. Ledingham, Bruning, & Wilson (1999) discussed time as an indicator of the perceptions and behavior of members of a key public. Ledingham (2000) has also published guidelines to building and maintaining strong organization public relationships. Bruning (2000) has examined the role that personal, professional, and community relationships play in respondent relationship recognition and intended behavior.

Wilson (2001b) has looked at public relations within communities in the new century. She has emphasized the importance of relationship building saying it will “be a strategic function directed by public relations but engaged in by key corporate leaders who participate in building productive relationships emphasizing communities of mutual support and cooperation” (p. 524). Allen (1992) wrote about the organization-public relationship in terms of commitment. Her research examined links between communication, organizational commitment, and perceived organizational support using a questionnaire.

In addition to public relations literature addressing the measurement of organization-public relationships, additional literature about strategic planning has helped guide the research for the NTBG audit (Leichty & Springston, 1993; Dozier, Grunig L, & Grunig, J., 1995; Wilson, 2000, 2001a; Hallahan, 2001). For example, Wilson (2001a) encouraged public relations professionals to extend strategic planning to communication tactics. She presented a matrix approach and argues that a strategic program should always contribute to the accomplishment of the organizational goals. In the most recent edition of her strategic planning book (2000), Wilson expanded on the matrix approach and presented several strategic outlines for external publications. Hallahan (2001) offered another look at strategic planning by discussing ways to improve public relations professionals' use of media outlets. Fortunato (2000) also examined public relations strategies for creating mass media content. He presented a case study of the National Basketball Association and showed the dominant role public relations plays in the leagues' popularity. In a study of community relations, Berkowitz and Turnmire (1994) suggested that to be most effective, an organization must proactively build an understanding of a community's issue orientation. Their study used interviews and a mail survey to segment community leaders' orientations toward foreign investment in local business.

Kim (2001a) developed a 2-step model to measure the economic value of public relations by testing 2 relationships: "the impact of public relations expense on reputation as a goal of public relations and the economic impact of reputation on companies' bottom lines (p. 3). Kim's model illustrates a new empirical method for public relations evaluation. Hon (1998) also presented ways public relations effectiveness can be

demonstrated and evaluated. Austin, Pinkleton, and Dixon (2000) conducted a mail survey of public relations practitioners to assess role orientations, research orientations, and perceived barriers to performing public relations research. They grouped public relations practitioners into two orientations, managers and technicians, and discussed ways to motivate each group. Bivins (1992) used systems theory to discuss the ethical decision-making process in public relations. He described his study as a “useful tool for aiding the public relations practitioner in an ordering of stakeholder claims and balances of obligations based on the role and function of the practitioner” (p. 365). Although, somewhat dated, Cochran and David (1986) addressed the effectiveness of organizational mission statements. They provided multiple examples of good and poor uses of mission statements. The authors content analyzed 135 mission statements and provided recommendations to several organizations about how to improve the readability and the tone of their written statements in order to maximize their organizational image.

Flanagin (2000) discussed the social pressures on organizational Web site adoption and provides a framework for looking at how NTBG adopted and set up an online presence. After studying 288 organizations’ decisions to adopt Web sites, Flanagin reported that there are social pressures operating at the interorganizational level that influence the decision to adapt to technological innovations, especially in the early phases of innovation diffusion.

Finally, Valenti (1999, 2000) identified how scientists and journalists can improve their conversation. She reviewed potential barriers to the needed dialogue between scientists and environmental and scientific journalists. She offered suggestions for improving communication within this relationship, in spite of professional differences.

Her studies suggest that scientists and journalists have shared goals based on ethical standards that can help open the channel for a much needed two-way conversation.

Overall, public relations literature continues to move in the direction of discussing and measuring the organization-public relationship. There is a need to combine the theories, instruments, and ideas of this movement into the frame of the communication audit. Public relations researchers and practitioners would benefit greatly from such a merger of methodology and research. Few researchers, in or outside of the public relations profession, are paying much attention to the communication audit. It is ironic that it is mentioned, although not elaborated upon, in most public relations textbooks, but rarely discussed or expanded upon in peer-reviewed journal articles.

CHAPTER 2

METHODOLOGY

Scholars agree that the communication audit is a three-part process: observation, diagnosis, and prescription. Scholars also generally agree on the essentials of audit design, but typically outline differing audit steps and procedures. The strategy used in the NTBG audit is similar to that proposed by Downs (1988) and includes the following steps: 1) initiation, 2) planning, 3) data gathering, 4) analysis, 5) evaluation, and 6) recommendations. Steps one through three refer to methodology and are presented in this chapter.

Initiation and Planning

The audit was initiated by a letter from the researcher to NTBG's director. The director returned a written endorsement expressing support for the project. The director of education and director of donor relations (there was no public relations or communications director) also conveyed support for the project and assisted the researcher throughout the research process. Additional support for initiation and planning was provided by the researcher's thesis chair, who is associated with NTBG as a fellowship program coordinator. A general description of the audit process was agreed upon by all of the above parties. Further initiation and planning included scheduling interviews with NTBG employees, agreeing on survey participants, and communicating frequently with NTBG's directors.

Data Gathering and Analysis

Most audit experts suggest using triangulation, the simultaneous use of different, corroborating instruments. Hamilton (1987) argues that “no one methodology, be it surveys, interviews, focus groups, network, or content analysis, is sufficient in itself” (p. 9). He explains how using more than one data instrument to conduct a communication audit allows the researcher to look at problems and opportunities from different perspectives, identifying issues by independent, corroborating evidence (p. 9). Downs (1988) explains that the “more measures used to collect data, the more reliable are the data; they supplement one another so that the consistency of findings can be tested” (p. 18). The NTBG audit used three data gathering methods: (1) interviews, (2) content analysis, and (3) questionnaires.

Interviews

Interviews provide high-quality information that can be probed in detail in a face-to-face relationship with the respondent (Downs, 1988). Advantages to interviewing include gaining familiarity with the organization’s employees, having in-depth discussions, allowing for serendipitous topics, and ending up with results that are less time-bound than other methods (p. 50). Downs suggested using interviews as the first methodology and to whenever possible interview all key people in the organization. “Generally, managers have more communicative contacts by nature of their roles in the organization. Therefore, it is highly desirable to interview all people in key positions” (p. 66). Downs also added it’s best to include representatives from all organizational units.

After obtaining subjects approval from the Institutional Review Board (IRB) of Brigham Young University, the researcher followed Downs' advice by beginning the data gathering phase of NTBG's audit with thirteen interviews, conducted by phone and in person with all key NTBG decision makers—those directly involved with the production or decision-making process of communication materials. The sample also included representatives from each of NTBG's three departments: scientific research, public education, and plant conservation. All participants signed the research consent form (see Appendix B). Interviews were conducted within a three-month time frame from May to July 2002. The interview schedule questions (see Appendix C) were drawn from public relations strategic planning sources (Wilson, 2001a; Wilson, 2000; Kim 2001b; Hallahan, 2001; Fortunato, 2000) and were adapted for differing types of publication—Web site, magazine, newsletter, video, letter, article, journal, or brochure.

The interview questions were structured and open-ended (Rubin & Rubin, 1995; Downs, 1988, pp. 49–79). The researcher taped and transcribed the interviews (summarized in Chapter 3). The results of the interviews were summarized and grouped into themes. The findings provided the researcher with a rich understanding of NTBG's external communication processes and materials and were used to determine which units to analyze and categories to code in the content analysis.

Interview Limitations

Downs (1988) points out three inherent limitations of interviews. First, they are time-consuming and expensive. Second, the results are difficult to code, analyze, and interpret using numbers. However, he notes, "Sometimes a person in an important position may present a good overview of a problem that others have not seen or

mentioned, and it would be foolhardy to disregard it simply on the basis of numbers” (p. 51). Third, interviews are limited to perceptual data, meaning the data is comprised of perceptual reports of how the respondent sees the organization. Another limitation may have been the openness of some the respondents based on the relationship of the researcher (niece) to NTBG’s chief operating officer, who was also one of the interview participants. However, the majority of respondents were unaware of the familial relationship until after the interviews were completed.

Content Analyses

The second methodology used in the communication audit was content analysis (Holsti, 1981; Riffe, Lacy, & Fico, 1998; Salkind, 2000). Holsti (1981) describes content analysis as a technique used to make inferences by systematically and objectively identifying specified characteristics of a message. Hamilton (1987) and Downs (1988) both recommend content analysis as an effective instrument in a communication audit. Content analysis answers the question, “What is the organization writing about?”

Riffe, Lacy, and Fico (1998) point out that content analysis is most efficient when explicit hypotheses or research questions are posed. “This kind of visualization before the analysis is undertaken feeds back into decisions about what content to examine, the level at which it should be examined, and the best analysis technique to be employed (p. 37). Based on interview results, the researcher designed a research question to guide the content analysis: *How do NTBG’s three primary publications fulfill the organization’s purposes as outlined by the 1964 charter* (see Appendix D) Beginning the content

analysis with a specific research question derived from previous research helped ensure a well-focused, valid design instrument.

Content Analysis Sample

Hamilton (1987) explained the sampling process must be objectively acceptable to the organization, or results will not be believed. He suggested the researcher “agree what is relevant, what is exceptional, and what is generic at least in general terms with the appropriate people” (p. 82). To ensure legitimacy and strengthen content validity, the researcher determined the units of analysis directly from interview results—allowing the appropriate people (the key decision makers) to influence the decision of which materials to analyze. During the interviews, participants were asked to identify NTBG’s primary external communication publications (see Appendix C, question #7). In response, the interviewees identified eight primary publications. According to Hamilton, “The secret of effective content analysis is the selection of what has to be counted and measured. The simpler the items selected, the more effective will be the analysis” (p. 82). To maximize the effectiveness of the audit’s content analysis, the researcher choose to narrow the focus by analyzing the three most frequently identified primary publications: *Plant Talk* magazine, the NTBG Web site, and *Allertonia*.

A purposive sample of the three primary publications was analyzed. Riffe, Lacy, and Fico (1998) recommend using a purposive sample when the publications play an important role during a certain time period (p. 86). The researcher learned while interviewing that most NTBG publications—including *Plant Talk*, the NTBG Web site, and *Allertonia*—were initiated, taken over, or revised under the leadership of the current director, who began working for NTBG in May 1997. In an effort to study the most

current and relevant publications, the researcher content analyzed a consecutive-unit sampling of the three aforementioned publications produced under the leadership of the most recent director and his staff over the last five years (May 1997–May 2002). The sample included six issues of *Plant Talk*, the current NTBG Web site (it hasn't been revised since its inception), and three volumes of *Allertonia*.

Content Analysis Instrument

A coding sheet was used for the individual issues of *Plant Talk* and *Allertonia* and one sheet for the entire Web site. Questions on the coding sheets were determined directly by the interview results and were designed to answer the research question. The interviews revealed that the participating NTBG decision makers place a strong emphasis on their mission statement, which is a shortened version of their congressionally-authorized charter formed in 1964 (see Appendix D). The charter explains that NTBG was formed as a nonprofit corporation with five specific and detailed purposes. The coding categories are derived from these five purposes. The instrument is designed to measure how well the three primary publications fulfill the purposes as outlined by the congressional charter.

Content Analysis Pretest

An initial pretest was conducted using three issues of the ten publications. These articles were randomly selected from the overall sample. After reading the training manual (see Appendix E) and a question and answer period, a second-year graduate student in BYU's master's of mass communication program and the researcher pretested the instrument. The coding sheet (see Appendix F) for each publication had 31 data entry points. The overall intercoder reliability for pretested articles was 90%.

Content Analysis Intercoder Reliability

The researcher assured the reliability of the content analysis by calculating an intercoder reliability coefficient using an independent coder's sub sample coding results. The sub sample was 30% of the overall sample size—exceeding the recommended 10-25% (Wimmer & Dominick, 1991, p. 173) The questions requiring interpretation and judgment using a seven-point Likert scale, resulted in the lowest agreement. “In general, the greater the amount of judgmental leeway given to coders, the lower the reliability coefficients will be” (p. 174). Using Holsti's index (Holsti, 1969), the researcher calculated an intercoder reliability coefficient of 90%. Most of the discrepancies among answers came from the Likert scale questions, which only represented a small portion of the overall coefficient.

Second Content Analysis

In addition to the primary content analysis, the researcher also designed a short five-question analysis to answer the following questions: *How is NTB using logos in their publications? Do NTB materials have a unified design/look?* The researcher drew a purposive sample of at least one of every type of publication for a total sample of 15. The same two coders analyzed the publications (95% intercoder reliability coefficient).

Content Analysis Limitations

Content analysis has some inherent limitations. Not all of the data are objective, resulting in researcher subjectivity and errors in codings and findings. Holsti (1981) pointed out another criticism of content analysis saying that researchers often choose this method because they feel the ability to quantify symbols is less likely to cause interpretive errors. He elaborated by stating that too much emphasis on quantification can

lead to superficial research and trivial findings. The above limitations were noted and taken into account during this project.

Questionnaire

The third methodology used in the audit was a questionnaire—the mainstay of most communication audits, according to Downs (1988). The researcher used a validated, reliable questionnaire (see Appendices G & H) developed and tested by public relations scholar Kim (2001b). The questionnaire was designed by Kim to measure an organization’s relationship with its publics using 16 questions measured on a seven-point Likert scale. The researcher received permission to replicate the questionnaire from the IRB of Brigham Young University. All respondents completed a research consent form before completing the questionnaire (see Appendix B).

Questionnaire Sampling

The sample publics were determined by interview results. While respondents identified various publics throughout the interviews, the researcher initially narrowed the desired survey audience into four groups: (1) All *Plant Talk* readers, which encompassed a broad national and international audience of researchers, scientists, botanists, conservationists, as well as NTBG’s donors, trustees, and fellows. (2) Visitors to Allerton, McBryde, and Limahuli gardens—the gardens with the most developed tour programs to date. (3) NTBG volunteers, which includes many people from the local Hawaiian community (the headquarters are located in Kalaheo, Kauai). (4) Former NTBG educational course participants, which includes physicians, journalists, college students, and biodiversity managers.

The researcher requested permission from NTBG's current director to distribute the questionnaire to the aforementioned four groups. Permission was granted to survey only two of the groups—the course participants and garden visitors. The researcher was asked not to survey any volunteers, staff, or donors.

In accordance with the approval of NTBG's director, the questionnaire was distributed to a systematic convenient sample of garden visitors and to all former NTBG course participants. NTBG offered the services of staff and volunteers for a three-week period in May 2002 to distribute the questionnaire to visitors of Allerton, McBryde, and Limahuli gardens. In person, the researcher trained the staff and volunteers to randomly select participants by asking every fifth visitor during the three-week time frame to sign the consent form and complete the survey after finishing the tour. If the fifth person declined, instructions were to ask each subsequent person until someone agreed to take the survey, then begin counting to five over again. A total of 40 questionnaires were completed during the three weeks.

The researcher worked with NTBG staff to locate the contact information for all former course participants, hoping to achieve a consensus sample. Updated records existed for 110 former students. Email surveys were sent to 88 participants and mail surveys were sent to 23. The overall response rate was 48%.

Questionnaire Instrument

In addition to Kim's original questions, the researcher added questions to each survey designed to measure behavioral effectiveness. During the interviews, respondents were asked to identify the "action desired of the audience" for each of NTBG's communication products, including educational outreach courses and the tour program.

Based on the participants' responses, survey questions used a seven-point Likert scale to measure whether respondents were taking the desired actions as a result of participating in the outreach courses or tour program.

Questions added to visitor questionnaire:

- Because of NTB, I want to learn more about plant conservation.
- Because of NTB, I am more interested in scientific research.
- Because of NTB, I am more interested in public education.

Questions added to outreach courses questionnaire:

- Because of NTB, I have a better understanding of global plant conservation issues.
- Because of NTB, I want to learn more about plant conservation.
- Because of my association with NTB, I am more aware of the role it plays in plant conservation.
- Because of NTB, I want to help others become more aware of plant conservation.

Questionnaire Pretest

The researcher sent a pretest to three former course participants by email to determine if the online survey worked correctly and to request feedback regarding the survey and its instructions. Two of the three responded with constructive feedback. One respondent was located outside the United States, so the positive response confirmed the online survey could be accessed internationally. Some small modifications were made to the online survey as a result of the pretest, and no reliability issues arose.

Questionnaire Limitations

The primary methodological limitation was the constraint of not being able to survey all of the desired primary audiences. Another constraint resulted from the accuracy of the records kept by NTBG on course participants. For example, the author could not survey former biodiversity course participants because NTBG staff was unable to locate records. (The organization lost some office files during a natural disaster and recent staff changes have caused problems.) In addition, the lists provided by NTBG on other course participants included many outdated addresses, phone numbers, and emails. However, the researcher was able to track down much of the necessary updated information.

CHAPTER 3

FINDINGS

Interviews

The interview schedule with executive staff consisted of two sets of questions (see Appendix C). The first set was directed at all participants (N=13) and addressed general issues regarding NTBG's communication philosophy and processes. The second set of questions was targeted around specific publications. These questions were asked in addition to the first set to those participants (N=12) who develop NTBG communication materials. Some participants were asked to answer the questions about more than one communication product.

Question set #1

1. *What do you see as the overall objectives and goals of NTBG?* Most respondents agreed that the goals and objectives of NTBG parallel the mission statement of the organization, which is “to administer gardens of extraordinary beauty and historical significance and to advance scientific research, public education and plant conservation.” Some responses went beyond the scope of NTBG as a whole addressing individual garden objectives. Others were less specific mentioning goals such as “saving tropical plants” and “making the world a better place.”

2. *How reflective of the mission statement are the current goals and objectives of NTBG?* Most respondents felt the mission statement is reflective of NTBG's current goals and objectives. However, some questions emerged regarding whether the mission statement needs to be amended. Two respondents talked about the future of the mission

statement saying there are developing scientific trends that will require the statement to be revised in a year or two. One individual expressed a concern that the statement is “not strong enough” and “tries to do too much.” Another agreed that the current mission statement needs to be improved, but offered no specifics.

This question also led to an unsolicited response as to whether the organization follows the mandates of the mission statement. One respondent explained a sentiment allegedly shared by others that there is a disconnection between what happens on a daily basis and what the mission statement mandates: “It’s hard to keep an abstract mission statement in your mind during your day-to-day activities.” This same respondent felt that NTBG seems to focus more intently on the mission of the gardens around the time when influential decision-makers visit: “The rest of the year, we’re not thinking about whether we’re fulfilling our mission and goals.”

On the other hand, many respondents shared examples of how the organization is “strategically focused” as a result of the mission statement. Several respondents pointed to the division of NTBG departments into education, conservation, and science in conjunction with the mission. Another mentioned that NTBG uses the mission statement regularly in meetings to focus efforts “whether it’s fundraising, deciding where to go on the next expedition, or deciding whom we are trying to influence.”

3. *Who do you see as NTBG’s primary audiences and publics?* Responses to this question were varied and depended largely on the specialization of each individual. Table 1 is a quantified table indicating what audiences were listed and how many respondents named each one. Researchers, scientists, local Hawaiians, and tourists were named most

frequently. U.S. citizens in general, course participants, and Web site visitors were among the publics least listed.

Table 1: NTBГ Primary Publics

IDENTIFIED PUBLICS	TIMES MENTIONED	IDENTIFIED PUBLICS	TIMES MENTIONED
Researchers/Scientists	10	Plant Talk Readers	2
Tourists/Garden Visitors	7	Regional Pacific Audience	2
Hawaiian Community/Local People Volunteers	6	Sister Institutions/Other Gardens	2
Decision Makers: International & National/High-Leverage People	4	U.S. Citizens	2
Donors/Private Foundations	4	Government Agencies	1
Educators	4	NTBG Trustees/Members/Fellows	1
Conservationists Environmentalists Plant Lovers	3	Physicians	1
Journalists	3	Biodiversity Managers	1
Students	3	Web site Visitors	1

Many initial responses to the question of audience were vague and general. For example, several respondents identified NTBГ’s audience as “global,” “national,” or “the general public.” In most cases, the researcher followed the initial question with prompts such as, “Could you be more specific?” or “Who is included in that category?” With additional probing, most respondents were able to better identify specific audiences. One

respondent, however, could not be any more specific than “a wide spectrum of people.” This individual said, “I don’t believe NTBG is specifically targeting anybody.”

4. *What is it that NTBG wants their publics to do?* Those who named specific publics in response to question three were usually able to identify what NTBG wants those publics to do. Table 2 represents a summary of the identified publics and the identified actions NTBG wants them to take (those publics with the same desired action are grouped together).

Table 2: Desired Action of NTBG Publics

IDENTIFIED PUBLICS	WHAT NTBG WANTS THEM TO DO
Researchers Scientists Sister Institutions Other Gardens	To collaborate in research and use available NTBG resources and facilities. To do more scientific research with tropical plants. “To support us: whether it be financial, verbal, or encouragement.” To be better stewards of the environment. “To get more involved, cite our articles, and want to do more research in this area.”
Tourists Garden Visitors	To know more about and support NTBG and its mission. To want to become more educated about tropical plants and conservation. “To understand how important the landscape is and protecting the land is.”
Hawaiian Community Local People Volunteers Regional Pacific Audience	To understand more about plants. To know more about NTBG and its mission. “To support us, to be involved with us, to feel like they’re part of us, have ownership in us.” “To feel like we’re doing something positive that makes a difference in their lives.” “To appreciate plants and to respect Hawaiian religious sites.” “To understand how important the landscape is and protecting the land is.”
Decision Makers: International & National High-Leverage People	“To become voice of NTBG and voice of conservation.” “We want them to do the telling for us and hopefully they’ll disseminate the right information at the appropriate time to the appropriate people.” “To support us: whether it be financial, verbal, or encouragement.” “To appreciate plants and to respect Hawaiian religious sites.” To be better stewards of the environment.
Donors Private Foundations Government Agencies NTBG Trustees NTBG Members NTBG Fellows	“To feel confirmed that this is an appropriate cause/organization to donate to.” “To continue to fund the scientific research needed to better understand the importance of these plants and what’s involved in saving them.” “To give us financial support so we can conduct and maintain our gardens, expand programs, research, and conservation education.” “To understand what we do so that we can work with them to interface and to leverage our work in relationship to other people’s work.” “To understand how important the landscape is and protecting the land is.”
Educators Students	To know more about NTBG and its mission. To gain a stronger conservation ethic.

	<p>“To become voice of NTBG and voice of conservation.”</p> <p>“To support us: whether it be financial, verbal, or encouragement.”</p> <p>To be better stewards of the environment.</p> <p>To gain knowledge they might not gain elsewhere.</p>
<p>Conservationists</p> <p>Environmentalists</p> <p>Plant Lovers</p>	<p>To know more about NTBG and its mission.</p> <p>To gain a stronger conservation ethic.</p> <p>“To feel like their work is not in vain.”</p> <p>To believe that they can make a difference.</p> <p>To come to the gardens for enjoyment and pleasure.</p> <p>“To understand what we do so that we can work with them to interface and to leverage our work in relationship to other people’s work.”</p>
Journalists	<p>To tell NTBG’s story.</p> <p>“To be ambassadors for the issues, not for the gardens, but for the issues that we are concerned with.”</p> <p>“To become voice of NTBG and voice of conservation.”</p> <p>“To support us: whether it be financial, verbal, or encouragement.”</p> <p>To be better stewards of the environment.</p> <p>To understand the issues of conservation.</p>
Physicians	<p>“To become voice of NTBG and voice of conservation.”</p> <p>“To support us: whether it be financial, verbal, or encouragement.”</p> <p>To be better stewards of the environment.</p>
Biodiversity Managers	<p>“To become voice of NTBG and voice of conservation.”</p>
Plant Talk Readers	<p>To understand more about plants.</p> <p>To know more about NTBG and its mission.</p>
U.S. Citizens	<p>“To gain a deeper awareness of the importance of tropical plants and the importance of conservation.”</p>
Web site Visitors	<p>To understand more about plants.</p> <p>To know more about NTBG and its mission.</p>

Some respondents had a difficult time answering the question about desired actions. Instead of describing what they wanted their publics to do, they described what the communication product was intended to do. For example, one person answered, “With the physicians, it’s giving them information they might not have gotten in normal courses.” With further prompting from the interviewer, the respondent was able to articulate that one desired action of physicians is to “understand the chemical activities of natural compounds and how they interact with each other.”

5. *How would you describe NTBG’s communication philosophy?* Six of the thirteen participants responded that NTBG has no communication philosophy or that they are not aware of one if it exists. Three respondents described the philosophy as

“developing,” “nascent,” and “still being formulated;” each proceeded to explain the direction NTBG is going with its communication strategy. The first of the three discussed improving technology to be able to reach more people within and outside of the organization. The second discussed becoming more globally focused and developing higher quality publication standards. The third individual discussed a three-fold strategy including reporters and journalists who come across the gardens on their own, those who come because of the environmental journalism course, and those NTBG hires to publicize the gardens. All three of these responses included targeting “high-leverage people.” Four respondents answered confidently that NTBG has a communications philosophy. Three of the four strategies mentioned involve reaching high-leverage audiences—to educate people who will in turn go out and educate other people. They referred to it as the “top-down philosophy.” The other strategy mentioned was “to inform the public in general and visitors specifically about our programs, goals, and objectives which include plant conservation.”

6. *What communication products already exist at NTBG?* Respondents named a total of 17 communication products. Those most frequently mentioned include outreach courses and *Plant Talk* magazine. Table 3 shows which products were identified and how many times each were mentioned. The outreach courses and *Plant Talk* magazine topped the list, while the CD and letters ranked lowest.

Table 3: NTBГ Communication Products

IDENTIFIED PRODUCT	TIMES MENTIONED
Outreach courses	11
Plant Talk	10
Educational program	6
Brochures	5
News articles/press releases	5
Web site	5
Tour guide program/booklets	5
Internal newsletter	4
Public lectures	4

IDENTIFIED PRODUCT	TIMES MENTIONED
Scientific papers	4
Allertonia	3
Books	2
Film “Gardens of Eden”	2
Rack cards	2
Volunteer program	2
CD “Nurturing in Garden”	1
Letters	1

In Table 3, the outreach courses were counted any time a person mentioned at least one. Table 4 breaks down how many times each individual course was mentioned. The interviews took place the same week as the environmental journalism course and the week before the ethnobotany course, which may have influenced responses.

Table 4: Breakdown of NTBГ Outreach Courses

SPECIFIC OUTREACH COURSES	TIMES MENTIONED
Journalism course	8
Ethnobotany course	5
Physicians course	5
College professors course	4
Biodiversity course	3
Horticultural course	2

The question about communication products led to unsolicited responses regarding the publication program as a whole. One respondent said, “I don’t think our products are entirely well developed enough. We need much more detailed information, materials for institutions and for our three component areas—conservation, education, science and programs within those areas.” This person also insisted that NTBГ needs to publish an annual report. Another participant expressed, “I think the scientific

publications program has been kind of overlooked over the last few years.” Several people brought up the publication they called “the bulletin,” that is no longer in print. One respondent said it is the general consensus of everybody that it should be “brought back to life.” This person feels that *Plant Talk* doesn’t say enough about the garden and that the bulletin was much more complete and valuable for getting specific garden news out. Others echoed the belief that the now defunct bulletin was valuable.

7. *What are NTBG’s primary external communication publications?* The majority of respondents named *Plant Talk* as the primary publication of NTBG. Table 5 identifies the other products mentioned as primary publications.

Table 5: NTBG Primary Publications

PUBLICATION	TIMES MENTIONED
Plant Talk	9
Allertonia	3
Web site	2
News articles/press releases	2
Outreach courses	2
Public lectures	1
Rack cards	1
Scientific papers	1

8. *Are there any other publications NTBG plans to implement during the next year?* Answers to this question varied widely and rarely overlapped. Seven respondents answered they were unaware of any plans for new publications. Other respondents listed the following:

- *Books.* One respondent mentioned plans to publish a South American “coffee” family history book, a Marquesa flora book, and a breadfruit book. Another person talked about a garden history book that will “require a full-time person

working on it for a year or two.” This individual also mentioned plans for a book with plant information on all the plants that have ever grown in the gardens. Plans include making the book information available on the Web site with digitized images.” Another book in the works covers the nomenclature of all the plants in the Kampong Garden and is geared toward the homeowner.

- *Magazines.* Three people mentioned plans for an ethnobotany magazine published four times a year in full color. It would be targeted to “an educational lay level.” One person mentioned plans for a “magazine on education.”
- *Interpretive panels/signs.* These include posters and signs that help visitors of the gardens better understand what they are seeing. They will correlate with the tour booklets. Some might include photos that help depict the history of the garden or island.
- *New education program curriculum.*
- *Revisions of tour booklets.*

General Comments

Respondents overall mentioned the desire to have a professional look pervading all NTBG print and Web publications. Some expressed the concern that with desktop publishing and Web building software becoming more available that people will start developing their own publications with a lower quality design and look. Most agreed the unified publication look is extremely important, however, no one specified a plan to implement such a strategy. Along those same lines, another individual expressed the need for a set of standard PowerPoint slides that could be used by various NTBG employees during presentations or lectures as an introduction to the gardens. This person mentioned

having beautiful slides from the garden and a brief introduction about the gardens and its mission would be very helpful and a nice beginning to the presentation.

Question set #2

The second set of questions was designed to help the researcher gather information about individual publication materials to be used for content analysis. After asking the first set of questions, the interviewer asked each individual if he or she was directly involved in the development of any NTBG communication products. Each person usually named at least one or two and the interviewer proceeded to ask questions about those products.

To report the findings of these questions, the researcher created tables (see Tables 6–18) about each publication showing summarized or directly quoted responses. Other noteworthy issues brought up in the interviews as a result of these questions are discussed after the respective table. Some tables may appear to have conflicting responses because more than one respondent addressed the publication. (See Appendix I for images from most of NTBG’s primary publications mentioned in interviews.)

Table 6: *Plant Talk* Magazine—Summary of Interview Findings

PLANT TALK MAGAZINE	
Objective	“To promote conservation worldwide.” “To provide brief info on venues of NTBG.” “To bring prestige to NTBG.”
Intended audience	Plant conservationists, educated lay people, botanical garden managers, park managers, policy makers, horticulturists, botanists, and students. Readers live in 120+ countries.
Intended secondary audience	NTBG donor base. University or college students. “People who have an interest in conservation and botany but don’t work in it.”
Action desired of audience	To understand more about plant conservation issues. To play a bigger role in plant conservation. To network with other conservationists globally. To confirm importance of NTBG to donors. To renew subscription. To get friends and colleagues to subscribe.
Intervening publics	Hugh Synge and editorial staff, Paul Cox, Mary Shuford, and Mike Maunder. Some peer review with scientific articles.
Main message	Plants are important and need to be conserved and protected worldwide.
Distribution frequency	Published quarterly. Sent to subscribers and certain level donors.
Delivery or distribution method	By mail and in NTBG’s gift shop. Plans being made for more retail sales in shops and libraries.
Collateral materials	Usually none. Occasionally a book/journal promotion.
Follow-up for questions or responses	By mail or email and mostly answered by Hugh or someone on the staff.

Questions about *Plant Talk* usually led to a discussion on what its role is in relation to NTBG. The magazine is paid for partially by subscriber dues and mostly by NTBG funds. Soon after NTBG began publishing *Plant Talk*, the magazine was renamed, “Plant Talk: The Bulletin of the National Tropical Botanical Garden.” The new subtitle has sparked a small controversy among those interviewed. Some respondents were pleased with the subtitle saying it helps get NTBG’s name recognized on a global scale. Others were skeptical, calling it a misnomer. They say it is not a replacement for the former bulletin and isn’t meant to be. They recommend rewriting it to say, “Published by

the National Tropical Botanical Gardens” or taking the reference off all together. The other consideration for the name change has to do with magazine marketability. One respondent said, “The bulletin implies it’s all about NTBG.” The argument is that retail stores and libraries are hesitant to carry a publication that appears to advocate or focus on one particular garden instead of the conservation movement as a whole.

The two-page spread toward the end of the magazine dedicated to NTBG news was also a topic of discussion. There appeared to be some disagreement as to whether this is effectively increasing NTBG’s reputation among readers or slightly annoying them because magazine subscribers are paying to read about conservation not NTBG. Some respondents are very pleased with the two pages. Others feel it’s not enough or too much news. One individual put it this way, “Not everybody understood that *Plant Talk* would not be a vehicle to talk about NTBG or to show the work of NTBG, it would remain a vehicle dedicated to showing the importance of plant conservation worldwide. Some of us like it this way, but some of us say ‘but what do we have that talks about us?’”

One solution mentioned involved publishing a separate newsletter or bulletin of some kind with more extensive NTBG news that could be inserted in the magazines going to NTBG constituent readers—not the general subscribers. This insert would be in addition to the two-page spread. Another respondent discussed plans to not only continue the two-pages of news but also to try to publish a feature article at least once a year that links directly to NTBG, for example an article on work in the Marquesas or research on breadfruit. The April 2002 issue contains one such article about rescuing endangered plants in Hawaii. The idea behind this strategy is to talk about NTBG “in a general way so the stories are not seen as NTBG propaganda.”

Some respondents expressed a strong desire to avoid actions that may seem like “NTBG propaganda.” They reiterated the role of the magazine as a service for plant conservation, not an in-house journal. One respondent quoted a typical *Plant Talk* reader saying: “If NTBG continues to pay for it [*Plant Talk*] to be produced, without turning it into an in-house journal of their own garden, we’ll be most grateful to them. Other than that, we have no particular interest and know nothing about NTBG. We don’t have a view about the job it does in other fields.”

The questions about *Plant Talk* also brought up much discussion on the magazine’s Web site, PlantTalk.org. Most respondents are extremely pleased with the current *Plant Talk* site and some expressed various goals for continual improvement. Such improvements include posting new stories on a weekly basis to attract return readers more frequently and developing more country data sheets that provide country-specific information on plants and conservation issues.

Table 7: Outreach Courses—Summary of Interview Findings

OUTREACH COURSES	
Objective	To educate high-leverage individuals.
Intended audience	School teachers, journalists, biodiversity managers, college professors, and physicians.
Intended secondary audience	None.
Action desired of audience	“To broaden their knowledge and appreciation of the importance of tropical plants in their professional endeavors.”
Intervening publics	N/A
Main message	“To provide in a sense a post-graduate intensive education on plant conservation and research in educational techniques focused on tropical botany.”
Frequency	Most courses are once a year for a week.
Delivery or distribution method	N/A
Collateral materials	Curriculum materials.
Follow-up for questions or responses	They can ask scientists in person.

Table 8: NTBG Web Site—Summary of Interview Findings

NTBG WEB SITE	
Objective	To keep people informed about who NTBG is and what they do.
Intended audience	Anybody who has access to a computer. High-leverage people.
Intended secondary audience	References made by high-leverage people.
Action desired of audience	Support NTBG financially and by “cheerleading.” To spread the word about NTBG.
Intervening publics	Donor relations and development group.
Main message	To communicate NTBG’s mission.
Distribution/revision frequency	Hasn’t been revised in 3–4 years.
Delivery or distribution	Always online.
Collateral materials	Links to other sites.
Follow-up	Emails responses from NTBG staff.

In general, respondents expressed dissatisfaction with the current NTBG Web site, NTBG.org. Almost all who mentioned the site said it needs improvement. There were several ideas for remodeling and adding functions and content to the site, but ownership of the project was never identified. Blame was shifted from department to department—saying they were waiting on each other. One respondent said visitor email questions are often lost and ignored because either they aren’t forwarded to the right people or because people are too busy to respond. No one keeps track of such details.

Table 9: *Allertonia*—Summary of Interview Findings

ALLERTONIA	
Objective	To disseminate original information on tropical botany and horticulture.
Intended audience	Botanists and horticulturists.
Intended secondary audience	Scientific community.
Action desired of audience	To learn about the subjects and apply learning to more research.
Intervening publics	David Lorence and peer reviewers.
Main message	Varies from issue to issue
Distribution/revision frequency	Published once a year. Not regular.
Delivery or distribution method	Mailed to subscribers. Exchanged with publications from other institutions and libraries.
Collateral materials	Price list for NTBG’s other publications.
Follow-up	Mailing list maintenance.

Allertonia used to be published more frequently than it is now. It's gone from a quarterly publication to an annual publication. There is no set time frame for publication. It is published on a supply-and-demand basis. Time constraints of the staff is also a factor on how often it comes out. A typical issue costs from \$10 to \$20. This interview produced the idea to publicize the journal on NTBG's Web site.

Table 10: Internal Newsletter, *Garden Chronicles*—Summary of Interview Findings

INTERNAL NEWSLETTER	
Objective	To share information about what each department does with each other. To communicate our mission and what we're doing to accomplish it.
Intended audience	NTBG staff and volunteers.
Intended secondary audience	Visiting scientists, trustees, and fellows.
Action desired of audience	"Quit complaining that they don't know what's going on and that nothing is happening."
Intervening publics	Diane Ragone.
Main message	There are activities and programs going on in each department. Content changes with each issue.
Distribution/revision frequency	Twice a year.
Delivery or distribution method	PDF and print copies to everybody with paychecks or by mail.
Collateral materials	None.
Follow-up	Never had to.

Several interviewees mentioned the absence of internal communication within NTBG and consider it a major problem. One person said, "I find the lack of communication really disturbing." Several respondents also said that departments seem to function independently of each other and don't keep each other informed. The newsletter is designed to help remedy the communication problem somewhat. However, some respondents admitted that they rarely look at it.

Table 11: Tour Guide Booklets—Summary of Interview Findings

TOUR GUIDE BOOKLETS	
Objective	Guide visitors through gardens. Communicate importance of conservation. Change attitudes and behaviors of visitors. Be enjoyable.
Intended audience	All visitors and local community.
Intended secondary audience	Course participants, school groups, fellows, and staff.
Action desired of audience	To appreciate the diverse uses and values of plants. To change their perception of what's happening in the ecosystem. Learn to respect Hawaiian religious sites (Kahanu). To enjoy visit and be awakened to new knowledge.
Intervening publics	Depends on the garden.
Main message	The ecosystem is fragile and plants are in danger. Tropical plants are valuable to people and cultures.
Distribution/revision frequency	Distributed daily; revised every 6–12 months.
Delivery or distribution method	By hand from gift shop or from tour guide. Also put in packets.
Collateral materials	Sometimes a membership brochure or rack card.
Follow-up	Tour guide or gift shop employees. Suggestion boxes at kiosks.

Respondents mentioned plans to eventually have all the tour guides the same size with a similar look. The McBride Garden is still generating content and is using three small pamphlets until all the text is developed. The Allerton is not strongly promoting self-guided tours and is therefore not working on a tour booklet. Limahuli and Kahanu have finished brochures recently developed and designed.

Table 12: Membership Brochures—Summary of Interview Findings

MEMBERSHIP BROCHURES	
Objective	To let people know about NTBG and encourage them to become members.
Intended audience	Visitors and potential donors.
Intended secondary audience	Plant Talk readers.
Action desired of audience	To become a member. To know they get a free subscription to <i>Plant Talk</i> for joining.
Intervening publics	Mary, Janet, and Paul.
Main message	NTBG is a cause worth supporting.
Distribution/revision frequency	Distributed daily. Revised recently for first time in seven or eight years.
Delivery or distribution method	By mail, by hand, or in packets.
Collateral materials	Occasional packet materials.
Follow-up	None.

Table 13: General Garden Information Brochures—Summary of Interview Findings

GENERAL INFORMATION GARDEN BROCHURES (This includes the Kampong Garden brochure)	
Objective	To describe NTBG overall. To give a general background of what NTBG does. “To get them aware.”
Intended audience	“Everybody.” Students, potential donors, foundations, individuals, press, and people who want to know more.
Intended secondary audience	None.
Action desired of audience	To be more informed. To become interested and make a donation. To want to learn more.
Intervening publics	Depends on the garden.
Main message	To portray the mission and purpose of the garden.
Distribution/revision frequency	Distributed daily. Revised every 1–4 years.
Delivery or distribution method	By hand from tour guides and visitors centers. In packets. By mail.
Collateral materials	Included often with general information packets. Press clippings, fact sheet.
Follow-up	If people call each garden takes care of questions.

Table 14: Gardens of Eden Video—Summary of Interview Findings

GARDENS OF EDEN VIDEO	
Objective	“To portray in a one half-hour film the three-fold mission of NTBG and its gardens in a compelling and exciting way.”
Intended audience	PBS filmmaker or a National Geographic television producer.
Intended secondary audience	Fellows, trustees, donors, and visitors.
Action desired of audience	For filmmakers to want to make their own professional films about NTBG.
Intervening publics	Paul Cox
Main message	To convey the mission of NTBG and to show in a compelling and exciting way each of the five components of the gardens.
Distribution/revision frequency	Sold in gift shop and given to fellows and trustees. Given to journalists and other filmmakers. “It’s not suitable for revision.”
Collateral materials	Film jacket with brief description.
Follow-up	People can write or call the donor relations dept.

Table 15: Rack Cards—Summary of Interview Findings

RACK CARDS (For Hawaii and Florida gardens)	
Objective	To get tourists' attention.
Intended audience	Local tourists. Foundations.
Intended secondary audience	None.
Action desired of audience	To become aware that NTBG exists; to visit gardens.
Intervening publics	Development staff.
Main message	NTBG is here, has a mission, and helps conserve tropical plants.
Distribution/revision frequency	Daily.
Delivery or distribution method	In tourist booths around islands and in Florida. Mailed to foundations.
Collateral materials	None.
Follow-up	Call or visit the gardens.

Table 16: Kahanu Garden Brochure—Summary of Interview Findings

KAHANU GARDEN BROCHURE (In Hawaiian and English)	
Objective	“Convey the correct information about we are, how we came to be, and what our goals and mission are.” “Convey that we are culturally sensitive and to us being stewards of this special site is no small thing, we take the job very seriously.”
Intended audience	Public who've never heard of Kahanu, the Hawaiian community, and the Hana community.
Intended secondary audience	School groups and special visiting groups to Kahanu.
Action desired of audience	To have a sense of security that NTBG is culturally sensitive. To support NTBG. To stop perpetuating false stories about Kahanu. To feel a reverence for the site, realizing it's more than a garden, it's a sacred site.
Intervening publics	Development staff.
Main message	NTBG cares about its stewardship of the garden. To tell the true story about history of garden and religious sites.
Distribution/revision frequency	Distributed daily. Never been revised.
Delivery or distribution method	Given to locals during free open houses. Given to visitors.
Collateral materials	Sometimes mailed with rack card or given with NTBG general five-garden brochure.
Follow-up	Call the garden for more information.

Table 17: Allerton Garden Souvenir Brochure—Summary of Interview Findings

ALLERTON GARDEN SOUVENIR BROCHURE	
Objective	To give Allerton visitors a souvenir piece.
Intended audience	Allerton garden visitors.
Intended secondary audience	None.
Action desired of audience	To remember their visit to Allerton garden.
Intervening publics	Development staff.
Main message	Allerton garden is a beautiful and historic place.
Distribution/revision frequency	Distributed daily. No revision since conception in 1995.
Delivery or distribution method	“We don’t know.”
Collateral materials	None.
Follow-up	None.

Table 18: Planned Giving Brochures—Summary of Interview Findings

PLANNED GIVING BROCHURES
The researcher was asked not to consider these brochures as part of the communication products because they are so out of date. They are not currently being distributed. There are plans to hire someone to work on planned giving and to update the brochures.

Content Analyses

Primary Content Analysis

The primary content analysis of the communication audit was designed to answer the following research question: *How do NTBГ's three primary publications fulfill the organization's purposes as outlined by the 1964 charter* (see Appendix D) The coding sheet (see Appendix F) consisted of 25 questions divided into five categories based on the five charter purposes. The content analysis results are separated into the three primary publication groups: *Plant Talk* (N=6), *Allertonia* (N=3), the Web site.

The five charter purposes are:

1. To establish, develop, operate, and maintain for the benefit of the people of the United States an educational and scientific center in the form of a tropical botanical garden or gardens, together with such facilities as libraries, herbaria, laboratories, and museums which are appropriate and necessary for encouraging and conducting research in basic and applied tropical botany.
2. To foster and encourage fundamental research with respect to tropical plant life and to encourage research and study of the uses of tropical flora in agriculture, forestry, horticulture, medicine, and other sciences.
3. To disseminate through publications and other media the knowledge acquired at the gardens relative to basic and applied tropical botany.
4. To collect and cultivate tropical flora of every nature and origin and to preserve for the people of the United States species of tropical plant life threatened with extinction.

5. To provide a beneficial facility which will contribute to the education, instruction, and recreation of the people of the United States.

Plant Talk Results

The researcher analyzed the following *Plant Talk* issues: Oct 2000, issue 22/23; Jan 2001, issue 24; Jul 2001, issue 25; Oct 2001, issue 26; Jan 2002, issue 27; Apr 2002, issue 28. Issue #22/34 was a combined issue with 72 pages, introducing the magazine under the new ownership of NTBG. All subsequent issues had 48 pages.

The first set of analysis questions measured how well *Plant Talk* promoted charter purpose #1. Using a five-point Likert scale (1=very well, 2=well, 3=neutral, 4=not very well, 5=not at all) the coder determined three of the magazines (50%) promoted charter purpose #1 *well*, two of the issues (33%) *not very well*, and one (16.7%) were *neutral*. Coding indicated that none of the magazines identified NTBG as a nonprofit organization; instead, it was identified as a privately funded organization. None of the magazines referred to NTBG as an institution for the benefit of the people of the United States. All of the magazines made reference to NTBG as an educational and scientific center and all issues generally encouraged research in basic and applied tropical botany. To help determine the magnitude of support for charter purpose #1, the researcher counted the number of times certain facilities are mentioned in the magazines. Herbaria were mentioned 10 times, libraries four times, and laboratories two times. Museums were never mentioned.

The second set of questions measured how well *Plant Talk* fulfilled charter purpose #2. Overall, the magazine scored very high in this category with all six issues

fulfilling this charter purpose *very well*. The coders determined that all six issues foster and encourage fundamental research with respect to tropical plant life as well as encourage research and study of the uses of tropical flora. Botanical research categories—forestry, horticulture, and medicine—were all mentioned in each issue. Agriculture was mentioned in all but one.

The third question set measured how well *Plant Talk* fulfilled charter purpose #3. The coders determined that one issue (16.7%) fulfilled this purpose *very well*; four issues (66.7%) *well*, and one issue (16.7%) *not very well*. All but one of the magazines disseminated the knowledge acquired at the gardens relative to basic and applied tropical botany. All six of the magazines mentioned or promoted other NTBG publications. Table 19 shows which communication products were mentioned in each issue.

Table 19: Publications Mentioned in Analyzed Issues of *Plant Talk*

ISSUE #	PUBLICATIONS MENTIONED
22/23	NTBG Web site, <i>Plant Talk</i> Web site, biodiversity course, journalism course, physicians course, internship program, scientific papers, journal articles, internal newsletter, <i>Allertonia</i>
24	NTBG Web site, <i>Plant Talk</i> Web site, journalism course, internship program, ethnobotany course
25	NTBG Web site, <i>Plant Talk</i> Web site, ethnobotany course, NTBG web site, journalism course, internship course
26	<i>Plant Talk</i> Web site
27	<i>Plant Talk</i> Web site, public outreach courses, education courses
28	NTBG Web site, <i>Plant Talk</i> Web site

Question set #4 measured how well *Plant Talk* promoted charter purpose #4. The results show that four (66.7%) of the magazines promoted this purpose *well*, and two (33.3%) were *neutral*. All six issues discussed NTBG's effort to collect and cultivate tropical flora as well as mentioned or implied the NTBG plays a role in plant preservation. All the magazines discussed NTBG's mission to preserve species of tropical

plant life threatened with extinction. However, not one issue mentioned that the preservation efforts are for the benefit of the people of the United States.

The last set of questions measured how well *Plant Talk* promoted charter purpose #5. The coders determined that three (50%) of the issues promoted the purpose *well*, two (33.3%) were *neutral*, and one (16.7%) *not very well*. All six of the magazines made reference to NTBG as an educational and instructional facility. All but one, made reference to the organization as a recreational facility. The final question of the coding sheet asks how many times NTBG is mentioned in the publication. Table 20 indicates ample mentions.

Table 20: Number of Times NTBG Was Printed in Analyzed Issues of *Plant Talk*.

ISSUE #	“NTBG” IN PRINT
22/23	59
24	31
25	29
26	12
27	25
28	35

Allertonia Results

The researcher analyzed the following *Allertonia* journals: Feb. 1997, vol. 7, no. 4, 85 pages; Feb. 1998, vol. 7, no. 5, 54 pages; Feb. 2001, vol. 8, no. 1, 341 pages. Because *Allertonia* prints the entire NTBG Congressional Charter on the back cover of the journal, many of the answers within the five charter purpose sections were answered yes in response to whether certain elements of the charter are mentioned or referred to in the journal. Because these responses refer primarily to the printed charter, they may not necessarily reflect the content of each issue. However, the Likert scale responses consider

the actual content within the journal. This may explain why there may be some inconsistency between some of the questions and the Likert scale responses.

The first set of questions measured how well *Allertonia* promoted charter purpose #1. Coding determined all three journals were *neutral* in regards to promoting this charter purpose. The results show that all three journals identify NTBG as a nonprofit organization and as an institution for the benefit of the people of the United States. Reference is also made to NTBG as an educational and scientific center and all issues generally encouraged research in basic and applied tropical botany. To help determine the magnitude of support for charter purpose #2, the researcher counted the number of times certain facilities were mentioned in the magazines. Herbaria, libraries, laboratories, and museums were each mentioned once in the printed charter.

All three *Allertonia* journals scored *very well* in their fulfillment of charter purpose #2. Because this is a scientific, research-based publication, all three journals predictably fostered and encouraged fundamental research with respect to tropical plant life as well as encouraged research and study of the uses of tropical flora. Botanical research categories—forestry, horticulture, and medicine, and agriculture—were mentioned in the printed charter.

Coding also determined that two *Allertonia* journals fulfilled charter purpose #3 *well* and one, *neutral*. All the journals disseminated knowledge relative to basic and applied tropical botany, but only two of them covered knowledge acquired by an NTBG scientist. One of the journals promoted a book published by NTBG and mentioned a course training program. The other two did not mention or promote any NTBG

publications or media. In one of the journals, an inserted sheet advertised books published by NTBG.

The results show all three *Allertonia* journals as *neutral* in fulfilling charter purpose #4. None of the journals discussed NTBG's effort to collect and cultivate tropical flora. However, they did mention or imply that NTBG plays a role in plant preservation. The charter clearly discusses NTBG's mission to preserve species of tropical plant life threatened with extinction. By printing the charter, the journals include reference to the preservation efforts for the benefit of the people of the United States.

The last set of questions measures how well *Allertonia* promoted charter purpose #5. Coding determined that the three journals scored a *not very well* in this category. The only mention of NTBG as an educational, instructional, or recreational facility appears in the printed charter. However, NTBG's name was mentioned 11 times in two of the journals, and 12 times in the other.

NTBG Web Site Results

NTBG's Web site was retrieved and analyzed on Dec. 13, 2002. The analysis included looking at all 12 Web pages linked to the home page and any subsequent links on the site. The Web site's promotion of charter purpose #1 was rated *neutral*. The site identified NTBG as a nonprofit organization, but it did not make reference to NTBG as an institution for the benefit of the people of the United States. The site described NTBG as an educational and scientific center as well as generally encouraged research in basic and applied tropical botany. Libraries and laboratories were each mentioned once on the site. Herbaria were mentioned twice and museums were never discussed.

Charter purpose #2 was fulfilled *well* by the Web site. The site fostered and encouraged fundamental research with respect to tropical plant life. However, it did not necessarily encourage research and study of the uses of tropical flora. This site mentioned various botanical research topics—agriculture, forestry, horticulture, and other sciences.

The Web site scored *not very well* in its fulfillment of charter purpose #3. The site disseminated some of the knowledge acquired at the gardens relative to basic and applied tropical botany. The site promoted only a few other NTBG publications and media including: *Plant Talk*, Planttalk.org, Garden Chronicles newsletter, and educational courses.

The Web site fulfilled charter purpose #4 *well*. The site discussed NTBG's effort to collect and cultivate tropical flora and also implied that NTBG plays a role in plant preservation. NTBG's mission to preserve species of tropical plant life threatened with extinction was discussed on the site. However, there was no mention that the preservation efforts were for the benefit of the people of the United States.

The Web site was *neutral* in its fulfillment of charter purpose #5. Although it made reference to NTBG as an education, instructional, and recreational facility, it did not help provide a beneficial facility for the benefit of the people of the United States. Because of the nature of the Web site with standard headings and footings, the number of times NTBG appeared on the site was not counted; it appeared at least once on every page.

Summary Frequency Statistics

Using SPSS 11.0, the researcher ran summary frequency statistics to create pie charts combining the Likert scores for the three primary publications studied in this

content analysis (N=10). Figure 1 shows that 30% of the publications promoted charter purpose #1 *well*, 50% were *neutral*, and 20% *not very well*. Figure 2 illustrates 70% of publications fulfilled charter purpose #2 *well*, and 30% *very well*. Figure 3 shows 10% of publications fulfill charter purpose #3 *very well*, 60% *well*, 10% *neutral*, and 20% *not very well*. Figure 4 demonstrates 30% of publications promoted charter #4 *well*, 50% *neutral*, and 20% *not very well*. Figure 5 shows 30% promoted charter purpose #5 *well*, 60% *neutral*, and 10% *not well*.

Figure 1: Promotion of Charter Purpose #1

How well NTBG's primary publications promote NTBG's efforts to establish, develop, operate, and maintain for the benefit of the people of the United States an educational and scientific center in the form of a tropical botanical garden or gardens.

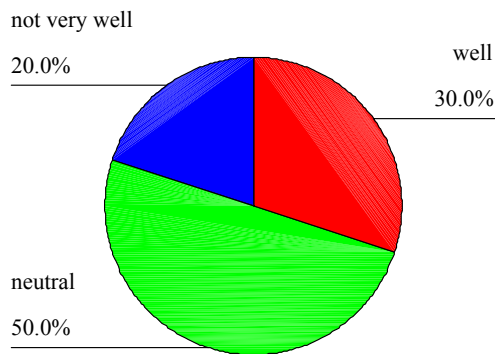


Figure 2: Fulfillment of Charter Purpose #2

How well NTBG's primary publications foster and encourage fundamental research with respect to tropical plant life and encourage research and study of the uses of tropical flora.

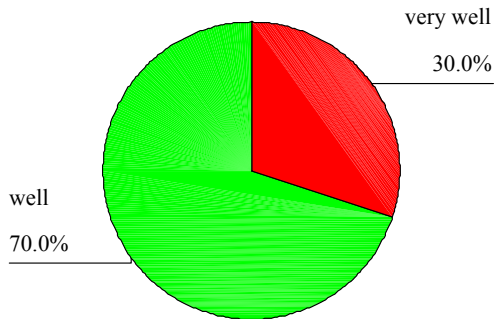


Figure 3: Fulfillment of Charter Purpose #3

How well NTBG's primary publications disseminate the knowledge acquired at the gardens relative to basic and applied tropical botany.

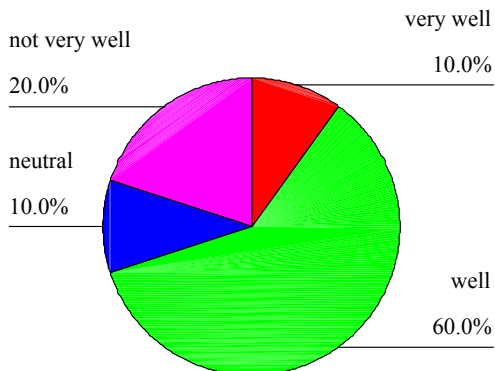


Figure 4: Promotion of Charter Purpose #4

How well NTBG's primary publications promote the collection and cultivation of tropical flora of every nature and origin.

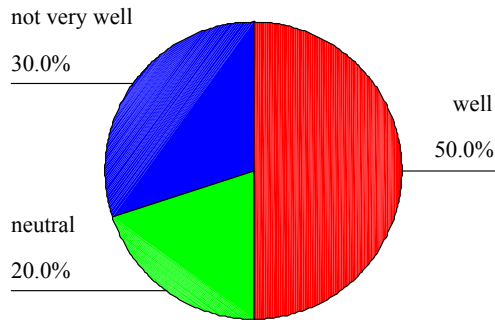
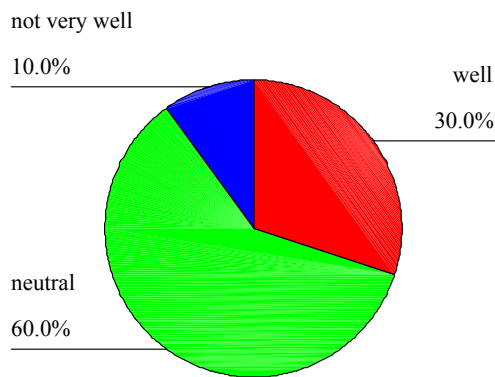


Figure 5: Promotion of Charter Purpose #5

How well NTBG's primary publications help provide a beneficial facility which will contribute to the education, instruction, and recreation of the people of the United States.



Secondary Content Analysis

The second content analysis was designed to answer the research questions: (1) *How is NTBG using logos on their publications?* (2) *Do NTBG materials have a unified design/look?* The coding sheet consisted of seven questions (see Appendix F) each asked

about all of NTBG's publications (N=15). Because the look is the same of all issues of *Plant Talk* and *Allertonia*, only one of each sample was included in the analyzed publications for this analysis. (See Appendix I for images from NTBG's publications).

Figure 6 shows the results of the first question. Only two (13.3%) out of the 15 publications present NTBG's official logo. The second question asked if there is another garden logo visible in the publication. Two publications did offer another garden logo: the Kampong brochure and the Limahuli tour booklet. Neither of these brochures included the NTBG logo anywhere in the publication, which made their individual logos the dominate branding. Figure 7 indicates 11 (73.3%) of the publications had at least an abbreviated version of NTBG's mission. None of the publications printed an individual garden mission statement (McBryde, Limahuli, Kampong, etc.). The last question asked if the overall look (design, images, paper, size, etc.) shared similarities with other analyzed NTBG publications. Figure 8 shows that 13 publications (86.7%) do not share a unified look.

The final open-ended question asked the coders to explain more about the publication's overall look. The comments focus mostly on how the publications differ from each other. However, there were a few similarities noted between publications that indicate the same person may have designed them. Yet, coding suggests even though a few of the looks might be similar, these publications do not share a unified look with all of NTBG's publications. Table 21 reports a summary of coding comments for each publication.

Figure 6: NTBG's Use of Logos in Publications

Is there an official NTBG logo visible in the publication?

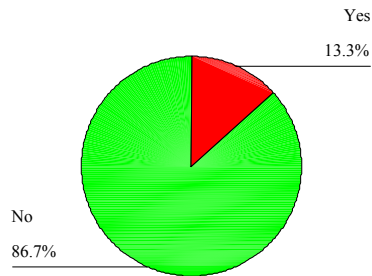


Figure 7: NTBG's Use of Mission Statement in Publications

Is NTBG's mission printed in the piece?

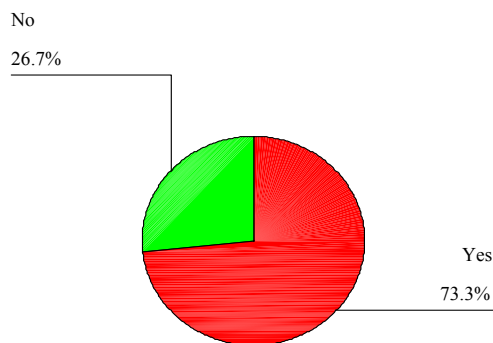


Figure 8: Overall Look of NTBG's Publications.

Does the overall look (design, images, paper, size, etc.) share similarities with the other analyzed publications?

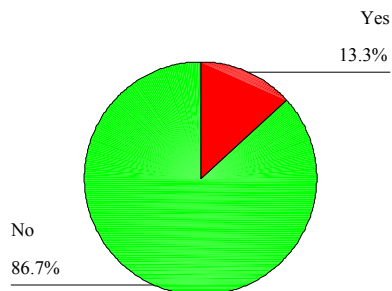


Table 21: Coding Comments Regarding Overall Look of NTBG Publications

PUBLICATION	CODER COMMENTS
NTBG Web site	Needs entirely new look and an internal search engine.
<i>Plant Talk</i> Web site	Look ties in well with print magazine. Professional web design.
Limahuli tour booklet	Only similarity is size with other tour booklets. Overall look different.
General NTBG brochure	Matches other 2 pubs by same designer, but not the overall look.
Garden Chronicles newsletter	Doesn't tie in with other publications at all.
Kahanu Garden brochure	Ties in somewhat, but not strongly.
Kauai Gardens rack card	Looks professional, but doesn't match.
Kahanu Garden rack card	Doesn't match other tour booklet in any way but size.
Allerton Garden brochure	Matches other 2 pubs by same designer, but not the overall look.
McBryde tour pamphlets	Not professional looking. Needs to be made into one booklet like others.
Kampong Garden brochure	Completely different than all other pubs.
<i>Allertonia</i> journal	Matches other <i>Allertonia</i> journals, but not other NTBG pubs.
<i>Plant Talk</i> magazine	Matches other magazine issues.
Kahanu Garden tour booklet	Size matches Limahuli's booklet, but look is different.
NTBG membership brochure	Matches other 2 pubs by same designer, but not the overall look.

Questionnaire

The survey instrument used by the researcher is a replica of Kim's (2001b) reported study introducing a valid and reliable survey designed to measure the organization-public relationship. After gathering the data from the two sample groups:

course participants (N=51) and garden visitors (N=36), the researcher followed Kim's testing method and ran a confirmatory factor analysis using the SPSS 11.0 factor analysis function for each group. Both results produced three-factor solutions explaining about 77% of the variance. Both results produced solutions with at least one factor having an Eigen value of 11 or greater and the remaining two factors with Eigen values between 1 and 2. In all likelihood, the inability to reproduce a five-factor solution is a function of the relatively high correlations for all items (see Tables 22 & 23).

An additional explanation for the differences in factor analysis results may be due to the methodologies. Kim used LISREL program to perform the factor analysis. Cronbach's alphas (see Tables 24 & 25) for each of the five factors, however, indicate a high level of internal consistency. As a result, the author proceeded with these five factors in her analysis.

Table 22: Correlations for Course Participant Questionnaire Results

Subscale	1	2	3	4	5
1. Trust	—	.773**	.670**	.753**	.732**
2. Commitment		—	.602**	.660**	.765**
3. Local or Community Involvement			—	.838**	.516**
4. Reputation				—	.645**
5. Behavior 1					—

** p < .01, two-tailed.

Table 23: Correlations for Garden Visitor Questionnaire Results

Subscale	1	2	3	4	5
1. Trust	—	.806**	.719**	.716**	.547**
2. Commitment		—	.687**	.703**	.545**
3. Local or Community Involvement			—	.727**	.524**
4. Reputation				—	.613**
5. Behavior 2					—

** $p < .01$, two-tailed.

Survey Factor Items

Both surveys were divided into five factor-item groups: trust, commitment, local or community involvement, reputation, and behavior 1 or 2. *Trust* items included survey questions one through four: (1) NTBG treats people like me fairly and justly. (2) Whenever NTBG makes an important decision, I know it will be concerned about people like me. (3) I believe that NTBG takes the opinions of people like me into account when making decisions. (4) Sound principles seem to guide NTBG's behavior. The *commitment* factors included survey questions five to nine: (5) I can see that NTBG wants to maintain a relationship with people like me. (6) There is a long-lasting bond between NTBG and people like me. (7) Both the organization and people like me benefit from the relationship. (8) Generally speaking, I am pleased with the relationship NTBG has established with people like me. (9) I feel people like me are important to NTBG. *Local or community* involvement factors were comprised of survey questions 10–12: (10) NTBG seems to be the kind of organization that invests in the community. (11) I am

aware that NTBG is involved in the community. (12) I think NTBG is very dynamic in maintaining good relationships with the community. *Reputation* items included survey questions 13–16: (13) NTBG has the ability to attract, develop, and keep talented people. (14) NTBG uses the organization's visible and invisible assets very effectively. (15) NTBG is financially sound enough to help others. (16) NTBG is innovative in its organization culture.

The last factor on each survey consisted of different questions designed to measure the behavior of both response groups. The course participant *behavior 1* factor item group consisted of four questions: (1) Because of NTBG, I have a better understanding of global plant conservation issues. (2) Because of NTBG, I want to learn more about plant conservation. (3) Because of my association with NTBG, I am more aware of the role it plays in plant conservation. (4) Because of NTBG, I want to help others become more aware of plant conservation. The garden visitor survey's *behavior 2* factor group included three questions: (1) Because of NTBG, I want to learn more about plant conservation. (2) Because of NTBG, I have an increased interest in botanical research. (3) Because of NTBG, I have a greater appreciation for public education. Tables 22 and 23 report the Chronbach's alphas for variables used on the course participant and garden visitor survey.

Course Participant Results

The mean scores of each item on this survey range between 1.4 and 2.9. The response range spanned the full seven points on the Likert scale on all but three

questions, where the range was one to six. Table 24 reports the mean, standard deviation, and range of the course participant responses.

Table 24: Descriptive Statistics for Course Participant Questionnaire Survey Results

Descriptive statistics and Chronbach's alphas for variables used to measure the organization-public relationship with NTBG course participants (N=51).

Indices	M	SD	Range*
<i>Trust (M=8.29, SD=4.54, a=.89)</i>			
1. NTBG treats people like me fairly and justly.	1.6	1.2	1-7
2. Whenever NTBG makes an important decision, I know it will be concerned about people like me.	2.4	1.3	1-7
3. I believe that NTBG takes the opinions of people like me into account when making decisions.	2.5	1.4	1-6
4. Sound principles seem to guide NTBG's behavior.	1.8	1.2	1-7
<i>Commitment (M=10.2, SD=7.28, a=.97)</i>			
5. I can see that NTBG wants to maintain a relationship with people like me.	2.1	1.6	1-7
6. There is a long-lasting bond between NTBG and people like me.	2.3	1.7	1-7
7. Both the organization and people like me benefit from the relationship.	1.8	1.3	1-7
8. Generally speaking, I am pleased with the relationship NTBG has established with people like me.	2.0	1.6	1-7
9. I feel people like me are important to NTBG.	2.1	1.6	1-7
<i>Local or Community Involvement (M=6.31, SD=3.88, a=.94)</i>			
10. NTBG seems to be the kind of organization that invests in the community.	1.9	1.3	1-7
11. I am aware that NTBG is involved in the community	2.0	1.4	1-7
12. I think NTBG is very dynamic in maintaining good relationships with the community	2.5	1.4	1-7
<i>Reputation (M=9.63, SD=4.75, a=.83)</i>			
13. NTBG has the ability to attract, develop, and keep talented people.	1.9	1.3	1-7
14. NTBG uses the organization's visible and invisible assets very effectively.	2.4	1.5	1-7
15. NTBG is financially sound enough to help others.	2.9	1.6	1-7
16. NTBG is innovative in its organization culture.	2.6	1.4	1-7
<i>Behavior I (M=6.12, SD=3.99, a=.93)</i>			
17. Because of NTBG, I have a better understanding of global plant conservation issues.	1.4	1.2	1-7
18. Because of NTBG, I want to learn more about plant conservation.	1.6	1.0	1-6
19. Because of my association with NTBG, I am more aware of the role it plays in plant conservation.	1.4	1.1	1-6
20. Because of NTBG, I want to help others become more aware of plant conservation.	1.6	1.1	1-7

*Note: All questions used a 7-point Likert scale (1=strongly agree, 2=somewhat agree, 3=agree, 4=neither agree nor disagree, 5= somewhat disagree, 6=disagree, 7=strongly disagree).

Garden Visitor Results

The mean scores for each item on this survey range between 2.0 and 3.1. The response range spanned the full seven points on the Likert scale on 12 of the 19 questions. Two of the questions ranged one to six and four questions ranged one to five.

Table 25 reports the mean, standard deviation, and range of the garden visitor responses.

Table 25: Descriptive Statistics for Garden Visitor Questionnaire Responses

Descriptive statistics and Chronbach's alphas for variables used to measure the organization-public relationship with NTBG garden visitors (N=36).

Indices	M	SD	Range*
<i>Trust (M=9.58, SD=5.17, a=.85)</i>			
1. NTBG treats people like me fairly and justly.	2.0	1.5	1-7
2. Whenever NTBG makes an important decision, I know it will be concerned about people like me.	2.8	1.6	1-7
3. I believe that NTBG takes the opinions of people like me into account when making decisions.	2.9	1.5	1-7
4. Sound principles seem to guide NTBG's behavior.	2.5	1.6	1-7
<i>Commitment (M=12.42, SD=6.72, a=.90)</i>			
5. I can see that NTBG wants to maintain a relationship with people like me.	3.1	1.4	1-7
6. There is a long-lasting bond between NTBG and people like me.	3.1	1.4	1-5
7. Both the organization and people like me benefit from the relationship.	2.4	1.5	1-7
8. Generally speaking, I am pleased with the relationship NTBG has established with people like me.	2.4	1.5	1-7
9. I feel people like me are important to NTBG.	2.5	1.7	1-7
<i>Local or Community Involvement (M=8.39, SD=4.08, a=.83)</i>			
10. NTBG seems to be the kind of organization that invests in the community.	2.7	2.0	1-7
11. I am aware that NTBG is involved in the community	2.9	1.5	1-7
12. I think NTBG is very dynamic in maintaining good relationships with the community	3.0	1.3	1-5
<i>Reputation (M=12.2, SD=4.69, a=.89)</i>			
13. NTBG has the ability to attract, develop, and keep talented people.	3.1	1.2	1-5
14. NTBG uses the organization's visible and invisible assets very effectively.			1-6
15. NTBG is financially sound enough to help others.	2.9	1.3	1-6
16. NTBG is innovative in its organization culture.	3.1	1.2	1-5
<i>Behavior 2 (M=8.03, SD=5.13, a=.95)</i>			
17. Because of NTBG, I want to learn more about plant conservation.	2.6	1.8	1-7
18. Because of NTBG, I have an increased interest in botanical research.	2.8	1.7	1-7
19. Because of NTBG, I have a greater appreciation for public education.	2.7	1.8	1-7

*Note: All questions used a 7-point Likert scale (1=strongly agree, 2=somewhat agree, 3=agree, 4=neither agree nor disagree, 5= somewhat disagree, 6=disagree, 7=strongly disagree).

Comparing Means

The researcher compared the mean scores of both sample groups using an independent sample-t test in SPSS 11.0 to determine which group reported stronger levels of agreement in each of the four shared factor item groups: trust, commitment, local or community involvement, and reputation.

As can be seen in Table 26, course participants reported a stronger agreement score (trust, M=8.29, SD=4.55; commitment, M=10.20, SD=7.28; local or community involvement, M=6.31, SD=3.89; reputation, M=9.63, SD=4.75) in all four areas than garden visitors (trust, M=9.58, SD=5.17; commitment M=12.42, SD=7.28; local or community involvement, M=8.39, SD=4.08; reputation, M=12.20, SD=4.69). However, the difference in means was only statistically significant for the local or community involvement and reputation groups. Because of the Likert measurement scale (1=strongly agree to 7=strongly disagree.) a lower mean score indicates a stronger level of agreement. These results suggest that course participants and garden visitors show equal levels of trust and commitment. They also show that course participants have stronger levels of agreement about NTBG's local or community involvement and reputation.

Table 26: Comparing Means Between Questionnaire Groups

Factor Groups	Range	Course Participants		Garden Visitors		t-value
		Mean	SD	Mean	SD	
Trust	4-28	8.29	4.55	9.58	5.17	-1.23
Commitment	5-35	10.20	7.28	12.42	6.72	-1.45
Local or community involvement	3-21	6.31	3.89	8.39	4.08	-2.4*
Reputation	4-28	9.63	4.75	12.20	4.69	-2.48*

*p<.05

CHAPTER 4

DISCUSSION AND CONCLUSIONS

Research Summary

NTBG's communication audit measured and assessed the organization's external communications system and activities. In essence, it was used to "take the pulse of the health of the organization's entire public relations program and its interaction with its stakeholders" (Matera & Artigue, 2000). As systems theory predicted, the findings of the NTBG audit are interdependent; they affect and rely on each other. The isolation of any one of the methodology results would distort the analysis (Downs, 1988). The use of triangulation helped the researcher see and assess the transformation processes of input, throughput, output, and feedback in NTBG's communication system. The interviews revealed NTBG's input and throughput processes, indicating how the organization gathers information from its environment to identify threats to the system's stability or and how they use that information to organize and formulate external relations messages. The content analysis results identified which messages were being output or released into the environment as an external relations communication or action in an attempt to restore equilibrium. The questionnaire examined NTBG's feedback loop by seeking information to determine the effects of the output.

Through the results of each of these methodologies the researcher was able to answer the five specific research questions driving the communication audit:

1. Is NTBG's external communication system reaching its target publics?
2. Are the target publics receiving the intended messages?
3. Are the communication messages achieving the objectives of the organization?
4. What can be done to improve communication not effectively reaching the targeted publics?
5. And, are there new methods of communication that need to be developed, adapted, or eliminated to meet organizational objectives or to target different audiences?

The interviews provided much of the background information needed to answer the first two research questions by identifying NTBG's target publics, intended messages, and overall objectives. The content analysis results determined how well NTBG's communication materials were achieving the objectives of the organization. The questionnaire results indicated how well NTBG's external communication system was reaching members of its target publics. The combined results of the three methodologies helped the researcher determine what can be done to improve NTBG's overall communication system.

Interview Results Summary

Target Publics

Interview results provided essential information about NTBG's target publics.

During the interviews, NTBG's key decision makers identified who they believed were

the organization's primary audiences and publics. Topping the list were: 1) researchers and scientists; 2) tourists and garden visitors; and 3) the Hawaiian community, local people, and volunteers. Answers to subsequent interview questions showed that the three primary publications identified by the participants—*Plant Talk*, *Allertonia*, and the Web site—specifically target only one of the primary audiences, researchers and scientists.

As stated in the findings, many interviewees had a difficult time identifying target publics. Some of them answered vaguely using descriptions such as “national,” “global,” or “as large as possible.” Although additional prompting on the part of the interviewer helped solicit more specific descriptions, the initial responses indicated that many of the respondents weren't in the mindset of targeting any specific audience at all. On the other hand, there were two respondents who named not only actual audiences but potential audiences as well. Interview results also indicated that most respondents who defined specific audiences listed those within their own field of expertise. Some of the respondents seemed unaware of products being developed by other departments.

There was also a great deal of discussion by a few of the interview participants in reference to targeting a “high-leverage” audience. One participant described this group as “school teachers, journalists, biodiversity managers, college professors, and physicians.” These high-leverage individuals were reported to be very influential: “those audiences who will turn around and pass the message along to a much broader audience.” They were also described as “well educated, between the ages of 30 and 70 and people who have a discretionary income.” Participants discussed targeting this audience primarily through the educational courses. The four respondents who mentioned this high-level strategy seemed to be very familiar with it and provided similar explanations. The other

nine participants shared some similar ideas, but not to the same extent, indicating the high-leverage strategy was either not being communicated on a widespread basis, or if it was, it was not remembered and probably not being implemented as well as it could be.

Another important point of interview discussion was the differing viewpoints offered regarding NTBG in relation to its local communities. Several interviewees expressed concerns regarding NTBG's relationship, or lack thereof, with the Hawaiian communities in particular. Some respondents were very aware of how this constituent group viewed the gardens. Others expressed that they prefer to ignore the relationship problems as to not draw more attention to them.

Action Desired of Target Publics

To determine whether NTBG's external communication system was reaching its target publics, the researcher had to determine who the target publics were and how NTBG wanted to reach them. Interview results answered this question by showing what NTBG leaders identified as the desired actions of the publics. This question also proved challenging for some interviewees. Instead of answering what NTBG wants their publics to do, many respondents instead described what the product was intended to do. For example, one respondent answered, "We want to expose them [the audience] to the critical nature of tropical plants." This answer shows the intent of the piece, but does not explain the action desired of the audience after reading the publication. The difficulty for the interviewees to think beyond *why* they wanted to produce products to *what* they wanted the audience to do as a result of the communication indicated a lack of strategy behind the development of some of NTBG's products. It appeared some of the publications were developed without a call for action to a specific audience. With the

help of several follow-up questions and hindsight, many of the respondents were able to adequately define the desired actions of the publics, which varied from giving monetary support to telling NTBG's story to collaborating in research.

NTBG's Overall Objectives and Goals

Interview results provided other important information to help answer the research questions by identifying NTBG's overall objectives and goals. Respondents agreed the objectives align very closely with the mission statement: To administer gardens of extraordinary beauty and historical significance, advancing scientific research, public education, and conservation of tropical plants. While most respondents appeared pleased with the current mission statement, a few indicated a need to change. Suggestions included shortening it, updating it according to new scientific trends, and focusing less on beauty and more on plants and conservation. There was also disagreement about whether NTBG consistently follows the mission mandates. About one third of the respondents didn't comment on this issue at all. Another third said they felt like the organization follows the mandates very well. One interviewee pointed out that the very structure of the organization reflects the mission statement; there are departments and directors of education, conservation, and science. However, several respondents within those departments expressed a lack of confidence in the organization's focus on the mission. There was a feeling of resentment on the behalf of at least two participants who felt the organization focused on the mission mandates at convenient times of the year near board meetings and VIP visits.

NTBG's Communication Products

Interviews were also used to determine which communication vehicles NTBG was using to deliver its communication messages to its target publics. Predictably, respondents usually identified communication products with which they were most directly involved, with the exception of Plant Talk. When asked to name all the communication products already existing at NTBG, less than half of the respondents mentioned the NTBG Web site, tour booklets, Allertonia, the internal newsletter, or the film, among others. When asked more specifically what interviewees considered the top three primary publications, Plant Talk, was named most with nine mentions, while Allertonia and the NTBG Web site came in second and third with only three and two mentions respectively. These scattered results indicate there may not be a great deal of internal communication among employees and departments as far as communication materials and development are concerned. For example, no one appeared to agree whose responsibility it was to further the building of the NTBG Web site. Parties claimed to be waiting on each other for the next move, creating a stalemate in progress. Another example was the use of the internal newsletter, Garden Chronicles. Some complained of not being informed about other departments, but then later admitted they'd never even looked at the newsletter intended to inform all NTBG employees and volunteers about organizational and departmental events.

When identifying current communication products, several respondents offered opinions about the publication program as a whole. Almost all respondents agreed that NTBG needs to create a more unified look in all their print and Web publications. A couple of the respondents were very concerned about the casual use of desktop

publishing programs to produce low quality mass media projects. These respondents alluded to the idea that there is very little quality control, if any, happening at a garden-wide level. Other participants suggested some of the following improvements: an increased and renewed interest in scientific publications, a standardized PowerPoint presentation for NTBG employees to use in presentations and lectures, and the publication of an annual report. In addition, many agreed that *Plant Talk* is not adequately replacing the now defunct NTBG Bulletin and would like to see this publication back in print.

NTBG's Communication Philosophy

Almost half of the respondents reported that NTBG has no communication philosophy or that they were not aware of one if it existed. Of the remaining participants, three described the philosophy as developing, and four confidently responded that NTBG has a “top-down” or “high leverage” strategy. The discrepancies in responses may indicate a lack of internal communication between NTBG decision makers. As one participant said, “We have a terrible time with internal communications.” As a result of poor internal communication, it appeared that organizational leaders were operating under very different assumptions or none at all about the direction of external communications. One respondent reported, “We are completely media unsavvy. We don't have any training or any knowledge in public relations. Many of us don't even know how public relations works or why it's important.”

During this part of the interviews, several respondents brought up the organization's recent experimental use of a public relations firm to promote a special event held in Florida to recognize international leadership in botany. The intention was to

“target the key media where our donors and potential donors read.” Reported reviews of this experiment were mixed. All agreed this was a very expensive endeavor and were reluctant to pay the agency more money until the results proved successful. However, no one seemed sure how to measure the success of the project against the financial investment. One respondent commented, “I’m frankly quite dubious about our public relations experiment. I really don’t know what significant value the public relations firm added to our efforts.” It was reported that just as many news stories were published without the help of the agency by either former environmental journalism course participants or by random journalists picking up the stories on their own. One respondent reported the best recent coverage cost them nothing: “Just people who came to the gardens, liked what they saw and experienced, and believed in it.”

Primary Content Analysis Results Summary

The primary content analysis results helped answer the research question: *Are the communication messages achieving the objectives of the organization?* The interviews determined that the objectives of the organization are directly linked to NTBG’s mission statement, which is an abbreviation of the gardens’ 1964 congressionally authorized charter. NTBG’s three primary publications (*Plant Talk*, *Allertonia*, and the NTBG Web site) were analyzed to measure how well their communication messages achieved the objectives of the organization as outlined in the charter.

Plant Talk

As a whole, the analyzed *Plant Talk* issues moderately promoted NTBG as an educational and scientific center for the benefit of the people of the United States (charter

purpose #1). Those issues with varied, detailed articles in the NTBG news section promoting the gardens' facilities and encouraging research in basic and applied botany scored well in this objective. Those with more general feature articles covering one topic in the NTBG news sections scored lower. Analysis results determined that *Plant Talk* magazines fostered and encouraged fundamental research with respect to tropical plant life and encouraged research and study of the uses of tropical flora (charter purpose #2). The magazines covered a wide variety of research topics in areas such as forestry, horticulture, medicine, and agriculture and most of the articles were very encouraging of new research in all areas.

Plant Talk promoted several of NTBG's other publications designed to disseminate knowledge acquired at the gardens relative to basic and applied tropical botany (charter purpose #3). All issues promoted *Plant Talk*'s own Web site, Planttalk.org. Only issues with an NTBG advertisement promoted the NTBG Web site, NTBG.org. The NTBG news section made reference to several of the educational courses periodically, but not regularly. The very first issue of *Plant Talk* under NTBG's management introduced many of NTBG's publications including *Allertonia*, all educational courses, the internship program, the internal newsletter, and scientific articles. *Plant Talk* was not used as a source of advertising for NTBG's own scientific journal, *Allertonia*, nor did it advertise the educational courses. The courses were reported after the fact in the NTBG news section.

Plant Talk measured well or neutral in efforts to promote the collection and cultivation of tropical flora of every nature and origin and to preserve for the people of the United States species of tropical plant life threatened with extinction (charter purpose

#4). The magazines analyzed generally covered and discussed NTBG's efforts to collect and cultivate tropical flora and to preserve threatened plant life. As would be expected in an international magazine, there is no mention that these efforts are exclusively for the people of the United States.

The final measurement of *Plant Talk* determined that the magazine promoted NTBG as a beneficial facility contributing to the education, instruction, and recreation of the people of the United States (charter purpose #5). Articles in the news section of each magazine made at least one reference to NTBG's facilities purpose to educate and instruct. Issues with an NTBG visitor or membership advertisement (five out of six) made the only reference to the gardens as a recreational facility for tourists. Coding counted the total number of references each issue had to NTBG. The first issue under NTBG's management had the most references at 59. Subsequent issues range from 35 to 12 references. To those NTBG organizational leaders who consider *Plant Talk* a major branding tool for NTBG, the drop in references could be concerning.

Allertonia

The analysis indicated that *Allertonia* was neutral in its contribution to establish, develop, operate, and maintain an educational and scientific center (charter purpose #1) as well as its efforts to support the collection and cultivation of tropical flora (charter purpose #4). The journal's strongest fulfillment of the charter's objectives was predictably its ability to foster and encourage fundamental research with respect to tropical plant life as well as encourage research and study of the uses of tropical flora (charter purpose #2). The journal partially fulfilled the organizational mandate to disseminate through publications and other scientific media the knowledge acquired at

the gardens relative to basic and applied tropical botany (charter purpose #3). The analyzed volumes published a great deal of scientific knowledge, only much of it wasn't acquired at the NTBG gardens. Considering this is a national scientific journal, it would be unreasonable to include knowledge only acquired at NTBG. However, it is an outlet to showcase NTBG scientists' research that should not be overlooked. The analysis results also revealed that *Allertonia* does not do much to promote NTBG as a facility of education, instruction, and recreation. It also does very little to promote other NTBG publications. Because of its nature as a scientific peer-reviewed journal its scope is appropriate. However, an occasional insert sheet advertising a particular course or a scientific book might help promote NTBG's facilities and services. NTBG's Web site address is a logical addition to the journal's inside front of back cover. The journal is consistent in its branding of NTBG. The official logo appears clearly on the front cover and the NTBG name appears at least 11 times in each volume. Every volume also prints the NTBG charter in its entirety on the back cover.

NTBG Web Site

The analysis determined the Web site was neutral in its promotion of NTBG as a scientific and educational center (charter purpose #1) and as a beneficial educational, instructional, and recreational facility (charter purpose #5). The site could do a great deal more in both these aspects. Recommendations will be discussed later in this chapter. The analysis found that the site fulfills the charter's mandate to foster and encourage fundamental tropical plant life research (charter purpose #2) relatively well. However, there is much more that can be done in an online environment to help NTBG encourage and foster even more research. The analysis determined that NTBG's Web site is doing a

poor job of disseminating knowledge acquired at the gardens relative to basic and applied tropical botany. For example, there was not one mention of NTBG's own scientific journal, *Allertonia*, nor any links to research publications or articles written by NTBG staff. The site did provide a very prominent link to Planttalk.org. However, NTBG's site design looked outdated and its content relatively bare compared to *Plant Talk*'s well-developed Web site. NTBG's Web site scored well in its efforts to promote the collection and cultivation of tropical flora and preservation of plant life threatened with extinction (charter purpose #4). The site provided information on NTBG's efforts to collect and cultivate plants and clearly implied the gardens play a role in plant conservation.

Combined Results

Plant Talk, *Allertonia*, and the Web site were most successful in fulfilling NTBG's objective to foster and encourage fundamental research with respect to tropical plant life and to encourage and study the uses of tropical flora (charter purpose #2). More than half the publications met the goal to disseminated knowledge acquired at the gardens relative to basic and applied tropical botany (charter purpose #3). However, there still needs to be a more concentrated effort to promote NTBG's publications and in-house research in its own materials so that all the publications meet this objective. Only half the publications fulfilled the objective to promote the cultivation and collection of flora of every nature and origin to preserve tropical plant life threatened with extinction (charter purpose #4). NTBG's cultivation and collection efforts should be promoted much more in its literature. The publications scored lowest in the areas of promoting NTBG's facilities (charter purposes #1 & 5). Overall, only one third of the publications met this goal, indicating that NTBG's publications gave them little recognition for their efforts to

establish, develop, operate, and maintain facilities to educate, instruct, and provide recreation for the people of the United States.

Secondary Content Analysis Results Summary

Secondary content analysis findings indicated that NTBG was not using its logos to effectively brand. Its publications did not have a unified look and design (see Appendix I for images from NTBG's publications). Only 13% of the publications had an NTBG logo visible. Two of the pieces without NTBG's logo offered their own garden logos as the dominant branding: the Kampong brochure and Limahuli tour booklet. Publications did better in communicating NTBG's mission; 73% pieces included at least an abbreviated version. Some of the individual gardens (Limahuli, Kahanu, etc.) printed their own mission statements, but none of them included them in the publications, making NTBG's the dominant mission. Finally, the analysis indicated that 87% of NTBG publications did not have a unified design and look. Those that measured a unified look were *Plant Talk* and *Planttalk.org*. The two publications tied together well and carried a consistent, unified look dating back to the inception of the magazine. The rest of NTBG's publications differed in design, size, paper quality, etc.

Questionnaire Results Summary

Once the target audiences were identified and the desired actions of those individuals described, the researcher used the questionnaire to determine whether NTBG's external communication system was reaching its target publics. Public relations strategists define reaching an audience as the act of building a public-organization

relationship (Broom, Casey & Ritchey, 1997; Bruning, 2000; Bruning & Ledingham, 1999; Grunig & Grunig, 2001; Kim, 2001b; Ledingham, 2000; Ledingham & Bruning, 1998; Wilson, 1997, 2000, 2001a, 2001b). The questionnaire was used to measure NTBГ's relationship with two publics: former course participants and garden visitors. The instrument measured trust, commitment, local or community involvement, reputation, and behavior.

The course participants' mean scores indicated they generally felt they had a trusting relationship with NTBГ and that the organization was committed to them. They seemed relatively pleased with NTBГ's local or community involvement, but were a little more reserved about how they perceived NTBГ's reputation, especially in terms of financial stability and organizational culture. The course participants indicated the highest level of agreement in the category of questions measuring their behavior and attitudes. During the interviews, respondents identified what they hoped NTBГ participants would learn and do as a result of the courses. These questions measured how well the participants fulfilled these expectations. The results showed that most garden course participants gained a better understanding of global plant conservation issues and became more aware of the role NTBГ plays in such efforts as a result of their course attendance. Participants also indicated they were eager to learn more about plant conservation and wanted to help others become more aware of such issues.

While searching for updated emails and addresses for survey distribution, the researcher contacted some of the former participants directly soliciting information about former course colleagues. The response from several of these former students was unexpected and surprising. They were very excited and flattered that someone affiliated

with NTBG was contacting them. Most of them were able to provide several updated emails and said that they regularly kept in touch with former colleagues. Others seemed very eager to find out what happened to colleagues they lost track of. There seemed to be a strong bond created among many students during of the courses, which in some cases led to lasting networks. Considering NTBG's missing and outdated records, it appears the organization has done very little to tap into these networks and not nurtured these relationships beyond the time spent at the gardens for the courses.

The other public-organization relationship measured by the questionnaire was between the garden visitors and NTBG. Visitors reported equal levels of trust and commitment as the course participants. However, the two publics significantly differed in their perceptions of NTBG's local or community involvement and reputation. The garden visitors were more skeptical of NTBG's efforts to invest, become involved with, and maintain good relationships with the community. They were also unsure about NTBG's ability to attract, develop, and keep talented people; use its assets effectively; financially help others; and create an innovative organizational culture. These attitudes could partly be a result of the visitors' unfamiliarity with the infrastructure of the organization; they're responding mostly to what they learn on the tour. Also, during the time the survey was distributed, there was a Hawaiian holiday, which meant the gardens were open free of charge to locals. Several of the responses could have come directly from those living in NTBG's surrounding communities. The behavior questions for the garden visitors measured attitudes toward plant conservation, botanical research, and public education. In comparison with the positive response of the course participants, garden visitors didn't report as much enthusiasm to act the way NTBG decision makers wanted them to (as

reported in the interviews). They indicated a moderate to weak desire to learn more about and greater appreciate plant conservation, botanical research, and public education. As would be expected, a course curriculum has stronger than a casual tour.

Plant Talk Discussion

Plant Talk magazine deserves its own summary discussion because of its role as NTBG's primary publication and because of the great deal of discussion it sparked throughout the audit process. The most conflicting viewpoints were in regards to the purpose of the magazine in relation to NTBG. Some considered *Plant Talk* as a valuable vehicle to convey NTBG's news and messages to a worldwide audience, while others said the magazine was only meant to convey broad international concerns about plant conservation, not spread NTBG's propaganda. There were also contrasting opinions as to whether it should be called the "Bulletin of the National Tropical Botanical Garden." Some suggested renaming the subtitle of the magazine to more clearly define NTBG's role as producer or publisher. There was also discussion about the magazine not fulfilling the role of the original bulletin. Many thought the bulletin should be brought back into publication. A logical compromise was the solution to print a shorter 1–2 page bulletin that can be inserted in the magazine and distributed only to certain readership groups such as NTBG members, trustees, fellows, and donors.

In the process of trying to gain permission to administer the survey to *Plant Talk* readers, the researcher noticed some discrepancy between viewpoints of some NTBG decision makers and the magazine's editorial staff. In one conversation, a magazine staff member said, "The great majority of *Plant Talk* subscribers are from outside the U.S.A.

and so, frankly, are unlikely to be interested in NTBG other than as the publisher of the magazine. They will probably not know any more about NTBG than is necessary for them to renew their subscriptions if they so wish.” Although the researcher was granted permission by certain NTBG leaders to administer the survey to *Plant Talk* readers, the editorial staff felt the relationship between subscribers and NTBG was too weak to survey. In fact, they felt subscribers would be upset if asked to assess such a relationship. If the staff was right, then some NTBG decision makers may have unmet expectations about the impact the magazine has to spread NTBG’s image on a global basis. Others’ expectations, however, are being met and even exceeded by the current arrangement.

Finally, the researcher noticed in the interviews that in the three years since NTBG began publishing the magazine, there has been very little effort to make the magazine’s staff feel a part of NTBG’s organizational community. The staff was unsure how to answer many of the interview questions asking about NTBG’s mission and goals. To enhance the organizational unity and communication channels, NTBG should increase its effort to reach out to and inform the magazine’s staff.

NTBG’s Overall Communication System

Systems theory reminds researchers of the need to take a holistic look at the organizational communication system and its subsystems. It is the overarching meta-theory that helps explain how external relations operate in an organizational environment (Bivins, 1992). Systems theorists have moved away from the old mentality that defined organizations as machines to a new analogy comparing organizations to living organisms (Goldhaber, 1983; Daniels, Spiker, & Papa, 1997). Systems rely on certain concepts to

maintain their organismic character, which are openness, hierarchy, wholeness, and feedback. Taken collectively, these basic concepts of systems theory “provide a dynamic view of organizations in action” (Daniels, Spiker, & Papa, 1997, p. 48).

The audit results identify NTBG’s external communication system as relatively open because it “has permeable boundaries that allow for environment-system interaction” (Goldhaber, 1983, p. 50). NTBG has made consistent efforts to interact with many of its constituents through publications and outreach programs. To increase its openness, NTBG could implement more constant change in the structure, function, and behavior of its external communication system. NTBG has a somewhat hierarchal communication system. The organization as a whole is hierarchal because it has defined management positions and departments. However, there is not a clearly defined system within the external relations subsystem. For example, the organization lacks clear rules about who should be responsible for various external relations products and programs. This lack of hierarchy leads to a lack of wholeness, which “means the effect of elements working in relationship to one another differs from the effect of their isolated, individual actions taken collectively” (Daniels, Spiker, & Papa, 1997, p. 44). NTBG’s external communication system is not utilizing all its resources, and many individuals or departments are working on external relations activities independently. Because systems consist of interdependent subsystems, it’s important that NTBG work to increase synergy. Finally, NTBG’s external communication system is operating in an environment with minimal external feedback. Both negative and positive feedback is necessary for the open system processes of maintenance and adaptation. More feedback from all of NTBG’s publics would help the organization better develop its communication strategies.

In addition to assessing the communication subsystems, researchers must also consider the suprasystem the organization itself functions in such as “the organization’s place in society, in its sector, geographical location, market, and role in the economy” (Hamilton, 1987, p. 112). The researcher took such factors into account when developing recommendations for NTBG. For example, she considered NTBG’s role as a nonprofit, government organization funded completely by donors as well as certain geographic limitations resulting from relatively remote location of the garden headquarters on the island of Kauai.

Limitations

The primary limitation of the communication audit was the constraint put on the researcher by NTBG determining which audiences could be surveyed. The author was not allowed to administer the public-organization survey to most of NTBG’s key audiences, including *Plant Talk* readers, general members, volunteers, and staff. Input from these key publics would have greatly enhanced the measurement of NTBG’s external communications success.

Another study limitation was the geographic distance between the researcher and the organization (Utah and Hawaii). The researcher was able to overcome some of the distance challenges by visiting the garden headquarters for two weeks. The author was able to conduct most interviews in person, tour all Kauai gardens, attend part of NTBG’s journalism fellowship course, and become more familiar with NTBG’s staff and facilities. Because of the short duration of the stay, the researcher was unable to distribute the questionnaire directly to the garden visitors. Instead, NTBG volunteers and staff

distributed the surveys. The researcher trained them in person regarding issues relating to reliability and validity. After returning to the mainland, almost all communication took place by email, phone, and fax. Additional limitations included small sample sizes and self-reporting.

The final limitation of this study was the number of researchers. This communication audit differed from most audits because only one researcher conducted it. Most communication audits are conducted by teams of professionals. Having only one researcher for this study significantly reduced the amount of time and resources available for the audit procedure.

Recommendations for NTBG

The recommendations for NTBG are intended to help guide NTBG's future external relations planning as well as respond to the final two research questions driving the audit: (1) What can be done to improve communication not effectively reaching the targeted publics? (2) Are there new methods of communication that need to be developed, adapted, or eliminated to meet organizational objectives or to target different audiences? The researcher determined which recommendations to present based on the most prominent and immediate needs of the organization.

1) Understand the role of public relations or public affairs in nonprofit organizations.

It is important to understand that NTBG is not an NGO (Non Government Organization). As a congressionally authorized entity, NTBG shares a similar profile

with other nonprofits, however, NTBG exists distinctly under a governmental mandate. As a governmentally established nonprofit, NTBG is more likely to adhere to “public affairs,” the term used by governmental agencies to describe the public relations function¹. Scholars explain “public affairs is the specialized part of public relations that builds and maintains mutually beneficial governmental and local community relations” (Cutlip, Center, & Broom, 1996, p. 15).

External relations, or public affairs, play a vital role in nonprofit organizations because by nature nonprofits are completely reliant on public support. As a result, they are often “caught in the conflicting crosscurrents of social, political, and economic trends that require managerial and public relations efforts of the highest order” (Cutlip, Center, & Broom, 1994, p. 497). External relations in most nonprofit agencies aim to (p. 497):

1. Gain acceptance of an organization’s mission
2. Develop channels of communication with those an organization serves
3. Create and maintain a favorable climate for fundraising
4. Support the development and maintenance of public policy that is favorable to an organization’s mission
5. Inform and motivate key organizational constituents (such as employees, volunteers, and trustees) to dedicate themselves and work productively in support of an organization’s mission, goals, and objectives.

¹ The 1913 Gillett Amendment states that federal agencies cannot spend for publicity unless specifically authorized by Congress. This amendment was reaffirmed by a public law enacted in 1972 that prohibits government spending on “publicity or propaganda purposes designed to support or defeat legislation pending before the Congress.”

“Neither the 1913 amendment nor the 1972 law refer to ‘public relations.’ Nevertheless, many federal, state, and local governmental officials apparently confuse publicity with the larger concept of public relations. As a result, agencies typically use other terms [such as public affairs] to describe the function of building and maintaining relationships with their constituents. It is nothing more than a name game” (Cutlip, Center, & Broom, 1996, p. 14).

As a nonprofit organization, NTBG is operating in a climate of change that includes increasing competition among charitable groups for financial and volunteer support, a growing concern about the credibility and accountability of tax-exempt organizations, and increasing cost and difficulty in raising funds² (Cutlip, Center, & Broom, 1994, p. 499). “As social and economic conditions require, and as the need for public support grows, public relations help create the public policy environment, volunteer participation, and philanthropic support crucial to the survival of charitable organizations (p. 496). In sum, the role of external relations in the nonprofit sector is “to establish and maintain relationships necessary to secure the organizational autonomy and resources needed to achieve their humanitarian missions” (p. 496).

2) Develop a strategic communication plan.

To improve its communication system, NTBG needs to develop a strategic communication planning program. The lack of a strategic plan often results in “programs that may reinforce controversy rather than resolve it, waste money on audiences who are not there, or add to misunderstanding and confusion instead of understanding and clarification” (Cutlip, Center & Broom, 1994, p. 345). The focus of the strategic planning should be on the quality of the relationships built with NTBG’s target audiences. “At the organizational level, the central concept for planning and evaluating public affairs programs is the *relationship* between the organization and its publics” (Grunig & Grunig, 2001). NTBG, because of its unique nonprofit but congressionally authorized status, may more easily focus on community relations.

² It is important to note that development and fundraising are sometimes considered a part of the public relations function. However, in this case, the tasks are better separated since NTBG is a completely privately funded governmental organization.

However, viewing external or community relations as relationship management may require a conceptual change for NTBG staff and management. “In place of the traditional view of public relations primarily as a communications activity, relationship management is conceptualized as a *management* function that utilizes communication strategically” (Ledingham & Bruning, 2000, p. 56). NTBG should be careful not to fall into the trap of excluding the management of organization-public relationships as part of the mix of activities critical to organizational success (Bruning, 2000, p. 444). NTBG’s external relations strategy should be designed around relationship goals, with communication strategies employed to support the achievement of those goals. Scholars agree the very survival of organizations in the 21st century will depend on the quality of the relationship built by organizations. “Approaches that have focused predominantly on profit and have formed relationships with internal and external publics for primarily manipulative purposes are doomed to fail in today’s evolving business ecosystems” (Moore, 1996 quoted in Wilson, 2001, p. 524).

One widely used tool for strategic planning is Wilson’s (1997) “Public Relations Strategic Program Planning Matrix” (Table 27). This matrix divides the planning process of public relations into four essential questions (pp. 79–80):

1. What needs to be accomplished to solve the problem (goals and objectives)?
2. Who needs to be reached and motivated to support the accomplishment of those objectives (key publics)?
3. What needs to be communicated (messages) to gain the cooperation of the publics?

4. What is the best way to send those messages (strategies and tactics) so that they reach those publics and move them to action that supports the accomplishment of the objectives?

NTBG has the advantage of approaching its strategic planning program with a great deal of helpful research already conducted during this audit. NTBG should start with the results of this study and begin the planning process, which will help determine additional and more specific communication goals and objectives. Some of the issues that surfaced during the audit that need addressing in the strategic planning process include:

- The creation of a unified look and design for all NTBG external relations products. To do this, NTBG may need to evaluate and possibly restructure its current publication development process.
- Renewed commitments to more effectively and consistently brand the NTBG logo. This discussion should also address if and how each of NTBG's individual gardens should be using their own logos.
- Agreement on future role of *Plant Talk* magazine. This publication was reported as a large expense for the gardens and its purpose remains somewhat controversial among NTBG decision makers. If *Plant Talk* remains an integral part of NTBG's communication materials, there needs to be a stronger effort on the part of both parties to make sure the magazine editorial staff feels a part of NTBG's organizational community.

Table 27: Public Relations Strategic Program Planning Matrix

Public Relations Strategic Program Planning Matrix																										
R E S E A R C H	1. Background	Synthesis of primary and secondary research providing background information on the industry and client, the product or program, market situation, and current trends in opinion and attitudes.																								
	2. Situation analysis	A one-paragraph statement of the current situation and refinement of problem definition based on research. A second paragraph identifies potential difficulties and related problems to be considered.																								
	3. Central core of difficulty	A one-sentence statement of the heart of the problem and potential harm to client if not resolved.																								
	4. Preliminary identification of publics and resources	The first part identifies and profiles all potential publics that may be affected by the problem or need to be motivated to aid in its resolution. The second part identifies intervening publics and other resources (tangible or intangible) that can be drawn upon for the campaign.																								
P L A N N I N G	5. Campaign goal(s)	The end to be achieved to resolve the central core of difficulty.																								
	6. Objectives	Specific, measurable, attainable, and time-bound results that will facilitate achievement of the campaign goal(s).																								
	7. Key publics	Those audiences necessary to achieve the campaign goal(s) and objectives. Identifies self-interests to aid in the development of messages that will motivate them. Assesses current relationship with each public and identifies its strategic cooperative community to assist in identifying influentials.																								
	8. Message design	Identifies the primary and secondary messages for each key public, taking care to incorporate each public's self interest.																								
	9. Strategies	Identifies specific strategies for each public designed to reach that public with its specially-designed messages.																								
	10. Tactics	Specifies tactics or media tools to support each strategy for each specific public. Each strategy will need to be supported with a number of tactics designed to convey the message to that public through the channel designated by the strategy.																								
	11. Calendar	A time-task matrix such as a Gantt chart to integrate implementation of the strategic plan. The calendar should be organized by public and strategy, scheduling each tactic.																								
	12. Budget	Organized by public and strategy, the budget should project the cost of each tactic in very specific terms. It should also indicate where cost will be offset by donation or sponsorship.																								
C O M M U N I C A T I O N	13. Communication confirmation	The communication confirmation table converts the plan devised for each public into short words in tabular form. The strategies and tactics for each public are reviewed to ensure they are appropriate to send the messages. The message should be confirmed against the public's self-interests. The table provides verification of the analytical process to make sure the plan will reach the publics with the message that will motivate them to action such that the campaign goal(s) is accomplished. <table border="1"> <thead> <tr> <th>Key publics</th> <th>Self-interests</th> <th>Influentials</th> <th>Strategy</th> <th>Tactics/Tools</th> <th>Message</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2.</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>3.</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Key publics	Self-interests	Influentials	Strategy	Tactics/Tools	Message	1.						2.						3.					
Key publics	Self-interests	Influentials	Strategy	Tactics/Tools	Message																					
1.																										
2.																										
3.																										
E V A L	14. Evaluation criteria	Identifies specific criteria to measure success based on the campaign goals and objectives.																								
	15. Evaluation tools	Specific evaluation tools appropriate to measure each of the evaluation criteria, including them in the calendar and budget.																								

Wilson, L. J. (2000). *Strategic program planning for effective public relations campaigns*, 3rd ed. Dubuque, IA: Kendall/Hunt Publishing Co., p. 15.

- The creation of a drastically improved NTBG Web site. Because the site has been stagnating since its conception almost five years ago, it needs a complete renovation. The site's content should be tended to on a monthly, weekly, or even daily basis (Gumpert, 1997). NTBG needs to take advantage of the Web's interactive nature: e-mail notices to visitors about new features, listerv opportunities, and sophisticated company-supplied search engines. "Content must be readily and easily available online in a private and secure area to everyone" (Gumpert, 1997, p. 43). Finally, in the strategic planning, NTBG needs to determine who is responsible for the Web site, whether it should be someone inside the organization or an outside company.
- The development of a new method for storing information about past course participants. One possibility is an electronic database that is updated at least every six months. This would also allow for greater ease for NTBG to keep in contact with this public by email or mail.
- The creation of more tools NTBG employees can use in their outreach efforts. For example, a standard PowerPoint presentation or postcards or thank you cards depicting pictures of plants from the gardens.
- The publication of an organizational annual report. Some interviewees mentioned that they intended to produce an annual report, but never made it a priority. Strategic planning processes address where this project should fall within the external relations priorities.

3) *Recruit help from communication professional(s).*

NTBG decision makers reported in the interviews that there was no one employed at NTBG with expertise in external relations or public affairs. To successfully develop, implement, and evaluate a strategic planning program, NTBG will need help from an experienced communication professional. Depending on NTBG's resources, this person or number of people could be hired full-time, part-time, temporarily, or on a consulting basis. Cutlip, Center, and Broom (1994) suggest several reasons for organizations to retain outside counsel, some of which apply to NTBG (p. 79):

1. Management has not previously conducted a formal public relations program and lacks experience in organizing one.
2. Headquarters may be located far from communications and financial centers.
3. The firm has a wide range of up-to-date contacts.
4. Outside counsel can provide services of experienced executives and creative specialists who would be unwilling to move to other cities or whose salaries could not be afforded by a single organization.
5. An organization may need highly specialized services that it cannot afford or does not need on a full-time continuous basis.
6. Crucial policy matters require the independent judgment of an outsider.

As a nonprofit, however, NTBG may want to consider talent already available to the organization, willing to provide less costly expertise, and taking advantage of existing knowledge of the organization. The need is to recognize and designate a communication professional to help develop a strategic planning program and also help develop better procedures for internal production processes. The audit results showed that NTBG

communication products were suffering in overall quality as a result of not having an established coordination and quality control process. Many projects were also put on the backburner, forgotten about, or simply neglected because they didn't fall into any particular person's job description.

4) *Communicate and implement the strategic plan on a cross-organizational level.*

The strategic planning program should be communicated clearly and often to all NTBG staff and volunteers. Because these employees will implement many of the strategic goals, it is critical they are aware of the strategic intent of the projects. A gap in communication between management and staff could significantly hinder communication goals. The organizational leaders are primarily responsible for the successful implementation of a strategic plan. External relations are “inescapably tied, by nature and by necessity, to the management function. Credibility starts with management integrity and socially responsible behavior” (Cutlip, Center, & Broom, 1994, p. 59). NTBG's management needs to earn and hold the support for the external communications function within the organization. “Unless support is earned, there will be conflict, not coordination and cooperation. Support and understanding develop with time and on the basis of a track record of achievements that contribute to organizational success” (p. 60). Experts offer the following tips to top management for long-term success (p. 60):

1. Commitment to and participation in building relationships with targeted publics
2. Retention of competent public relations [or public affairs] counsel
3. Incorporation of public relations perspectives in policy making

4. Two-way communication with both internal and external publics
5. Coordination of what is done with what is said
6. Clearly defined goals and objectives

5) *Understand what to assess when measuring the outcome of strategic efforts.*

NTBG would benefit from understanding tactics for effectively measuring the outcome of strategic efforts. Like most organizations, NTBG would like a simple return on investment formula that measures the bottom-line effects of external relations. Wilson (2001a) explains that the bottom-line measurement in today's business environment has become the very definition of a strategic function. She asserts the strategic function of external relations takes place when the efforts contribute to the overall success of the organization. "Whether 'overall success' is defined solely as profits or more broadly in terms of the organization's contribution to its community and diverse publics, public relations, to be strategic, must support the organization's achievements of its mission and goals" (p. 215). She says with the shift to a relationship-centered focus, organizations will have to get used to new evaluation techniques to gauge success (Wilson, 2001b). Some of these measures for NTBG could include accountability to visitors, institutional partners, visiting course participants, employees, communities, and society as well as to donors. "Evaluations will extend beyond the financial measures to include standards that measure broader success in the community such as customer and employee satisfaction and the reduction or elimination of social problems" (p. 525).

Grunig and Huang (2000) suggest that many organizations try to measure the success of external relations efforts with ineffective "process indicators." They explain

that quantifying tangible products such as publication clips, broadcast placement, press releases issued, attendance at special events, etc. is only measuring the process success. Instead, they suggest that organizations examine the “outcome indicators” such as enhanced relationship attitudes, improved evaluations of the organization, or increased loyalty behaviors. Kim (2001a) points out that some benefits of good public relations work is difficult to measure because it is preemptive in nature. For example, external relations can prevent crises. “However, these prevention effects normally are not measured as bottom-line effect, even though these effects are closely related to the company’s survival and profitability” (p. 23).

NTBG leaders expressed a great deal of concern regarding budgeting for its external relations efforts. J. E. Grunig and L. A. Grunig (2001) discuss how to cope with limited resources by suggesting several ways to trim a public relations research budget (pp. 5–6):

1. *Use secondary analysis rather than conducting primary research.* Look at data collected initially for some other organization or purpose rather than doing your own, original study. Remember that the main cost for research is gathering the data, rather than analyzing them. To find relevant information for your secondary analysis, start with the newspaper: The mass media constantly publish public opinion polls and other research results. Search the LEXIS-NEXIS database. Peruse the census bureau data. Don’t ignore university libraries, where archived data are never proprietary.
2. *Piggyback onto someone else’s original research.* Research firms offer omnibus or caravan surveys that spread the fee out over multiple sponsors.

Tack your questions onto the larger survey instrument, which represents a combination of queries of interest to all parties. Also consider the in-house piggyback option: inviting other departments [in this case botanical gardens] to cooperate on a single, large-scale study whose costs can be shared among those units.

3. *Learn to do research yourself.* Despite a lack of time or empirical expertise, you can teach yourself the “hows” of the process. Hiring an outside firm is a smart choice under many circumstances, but even then you need to know enough to decide on the role you want consultants to play and to explain exactly how you intend to use their research results. Consider short courses or professional development programs.
4. *Rely on [communications] scholars—either students or professors.* You can save on the cost of research by hiring graduate students, who are supervised by their faculty advisors. Often, these scholars are on the cutting edge of knowledge about conducting ethical, effective research. They may be looking for projects to increase their familiarity with the process and thus are willing to charge less and do more. [Professor JoAnn Valenti, a noted communication scholar is already involved with one NTBG course; and this study exemplifies how graduate students might assist NTBG in achieving goals.]
5. *Work with smaller samples.* Although accuracy increases with sample sizes, the rate of improved accuracy does not increase significantly after an N of 400. Public affairs can live with a reasonable margin of error, because the

stakes are not life and death. Smaller samples may result in having more time and money to spend on data analysis, rather than data collection.

6) *Better manage community relations awareness and efforts.*

With an increased emphasis by public relations experts on the importance of organizations forming positive relationships with their communities, NTBG needs to continually be aware of how its behavior influences the local publics and make an effort to improve the relationship. NTBG should recognize and accept its responsibility to its employees, volunteers, visitors, and neighbors to engage in cooperative action for the growth, benefit, and improvement of the community. “Loyalty toward an organization in a community is strengthened by the community members’ perceptions of the organization’s openness and its involvement and investment in, as well as its commitment to, the community” (Ledingham & Bruning, 1998).

NTBG has already taken some steps to implement programs for the benefit of its local Hawaiian community. For example, NTBG scientists often lecture at community functions or local schools. On certain days of the week, the gardens are free of charge to local visitors. However, there have also been decisions made by NTBG that damaged its community relationship. The strategic planning process should address ways NTBG can continually improve this relationship. Such goals should be driven by the “strategic pursuit of an improved quality of life for all community participants” (Wilson, 2001b, p. 525).

7) *Improve understanding of relationship between scientists and journalists.*

Because scientists make up much of NTBG's staff, it would benefit the organization to better understand and know how to improve the relationship and dialogue between scientists and journalists. A first step in this process is to note some of the differences and similarities between the two groups. As Valenti (2000) points out, scientists "value advanced knowledge: technical language; near certainty; quantitative, complete and narrow information. They are specialists; theoretical, in that they value knowledge for its own sake; cumulative, therefore, slow; objective...; past dependent; not attention seeking; and enjoy high professional status" (p. 544). On the other hand, journalists "value diffuse knowledge; simple language; indications; qualitative, incomplete yet comprehensive information. They tend to be generalists; applied, in that they focus on what is relative to society; non-cumulative and very fast; advocates...; also past dependent; not personally attention seeking; and according to most public opinion polls, at the lower ranks in terms of professional status" (p. 544–545).

Although scientists and journalists use different processes and approaches in their respective work, Valenti identifies that they have a "potentially shared value of accuracy and facts that lend to a certain optimism for finding common communication ground" (p. 545). This common ground is rooted in the ethical norms adhered to by both groups. More specifically these norms are the "shared moral rules of honesty and concern for the well being of others" (p. 545).

Putting professional stereotypes behind them, scientists and journalists need to be prepared for a two-way conversation. They need to "come to the table prepared, ready to work with each other, take the time to consider journalistic processes and demands, and

see the value of trained communication experts” (p. 547). Valenti recommends that scientists give the time and attention needed to share their message at a level appropriate for general audiences as well as dismissing negative perceptions of the media. She also advises journalists to prepare well for scientific stories by better understanding scientific thinking and having a good contact list of expert sources. In the end, improving the relationship between scientists and journalists will depend on whether they recognize a need for shared understanding and agree that the goal is “conversation” (p. 548).

8) *Increase stewardship over previously established relationships.*

Public relations experts stress the importance of maintaining positive relationships with publics once they’ve been formed. A positive relationship is based on factors such as trust, commitment, and involvement that are developed through multi-year efforts (Kelly, 2001). Kelly (2001) breaks the concept of stewardship into four elements: 1) *reciprocity*, or how the organization demonstrates its gratitude for supportive beliefs and behaviors; 2) *responsibility*, meaning that the organization acts in a socially responsible manner to those who have supported it; 3) *reporting*, keeping publics informed about the developments related to the opportunity or problem for which support was sought; and 4) *relationship nurturing*, letting publics know on a regular basis that the organization cares about them, respects their support, appreciates their gifts, and wants their interest and involvement.

Relating stewardship to fund raising, Worth (1993) explains, “Because the best prospects for new gifts are past donors, programs that provide donors with timely information on the impact of their gifts can pay significant dividends in continued

support” (p. 13). NTBG decision makers expressed an understanding of the need to continually nurture their relationships with donors, however, they reported little effort to nurture relationships with former course participants (journalists, physicians, botanists, and biodiversity managers)—those designated as a top audience and as “high-leverage individuals.” As a result, these opinion leaders are attending courses for a week or two and then returning to their careers and homes with little or no contact again from NTBG. There are many actions NTBG could take to increase its stewardship over these publics. One immediate step could be the gift of a free subscription to *Plant Talk*, which NTBG already does for all its general members who donate at least \$50 a year. With so few numbers of former course participants (less than 150) the benefits of the relationship building would outweigh the costs of the magazine. “Reporting to publics reinforces positive attitudes and behaviors, and it increases the probability that supportive publics will react similarly in future situations” (Kelly, 2001, p. 285). Additional ideas for connecting with this public include sending occasional emails or postcards with strategic messages or promotions that let them know NTBG still values their support.

Future Research

To successfully implement a strategic planning program, NTBG will need to regularly evaluate its effectiveness on an ongoing basis. Future research should include assessing the organization-public relationship on a large scale by surveying all of NTBG’s target publics, including general members, trustees, fellows, *Plant Talk* readers, all staff, and volunteers. Future research could also include a focus group study with specific NTBG constituents to determine their needs and desires more precisely.

Readership satisfaction surveys for magazine and journal subscribers and visitor satisfaction polls should also be distributed yearly or biyearly. Another opportunity for future research lies in the area of NTBG's tour program. A detailed study of the tour booklets, maps, guided tours, interpretative signs, posters, etc. could help determine ways the education department could improve its visitor program. A content analysis study of botanical gardens' and similar institutions' Web sites could identify ways to better develop and continually improve NTBG's Web site.

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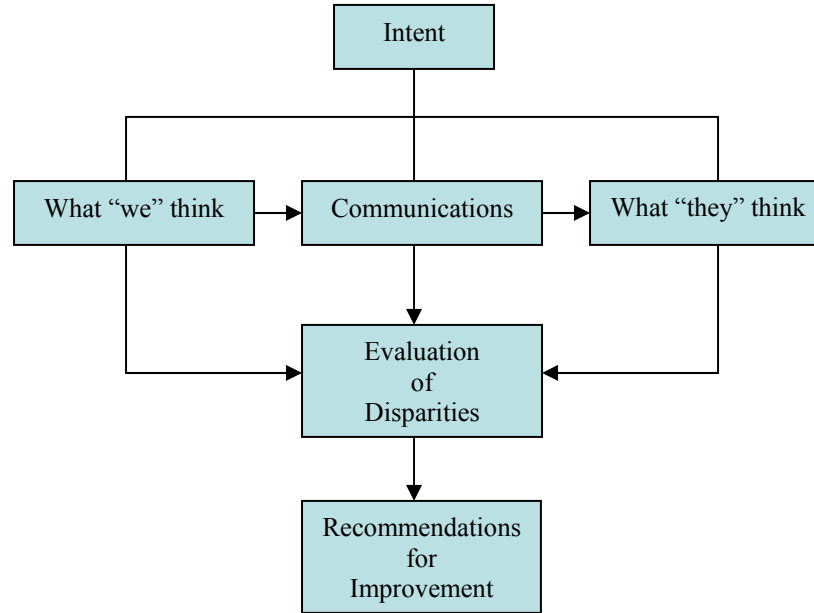
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APPENDIX A

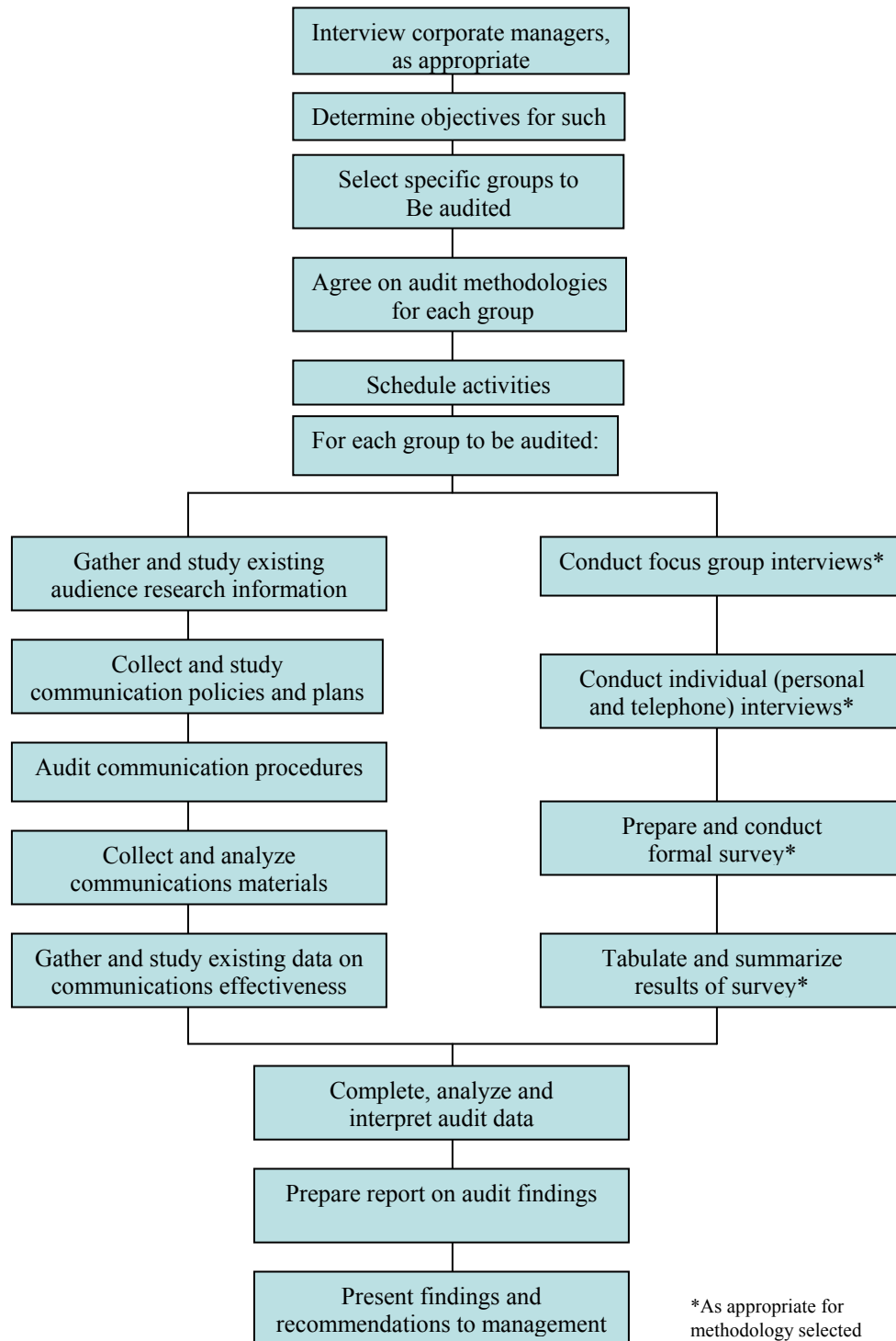
Communication Audit Technique Figures

Figure 1: Communication Audit Design



Source: Newsom, Turk, & Kruckenberg, 1996 p. 108.

Figure 2: Typical Audit Procedure



Source: Newsom, Turk, & Kruckenberg, 1996 p. 107.

APPENDIX B

Research Consent Form

This survey/interview is being conducted by BYU student Melody Murdock to evaluate and make recommendations for NTBG's external communications. Research participants and respondents are chosen based on their relationship to NTBG.

The survey consists of validated items on a reliable instrument and will take about 10 to 15 minutes to answer. The interview consists of questions developed from theory and will take approximately 30 minutes.

The results of the survey/interviews will help the researcher evaluate the effectiveness of NTBG's relationship building and external relations efforts. There should be no risks or discomforts.

Involvement in this study is voluntary. Respondents may withdraw at any time without penalty or refuse to participate entirely. Individuals will not be identified in the research. Responses are confidential.

If there are questions regarding the study, contact will be directed to thesis supervisor, Dr. JoAnn Valenti, F-547 HFAC, Brigham Young University, Provo, UT 84602; phone (801) 422-7020.

If there are questions regarding rights as a participant in research projects, contact is directed to Dr. Shane S. Schulthies, chair of the Institutional Review Board for Human Subjects, 120 RB, Brigham Young University, Provo, UT 84602; phone, (801) 422-5490.

Informed Consent

Date

Name printed

APPENDIX C

Interview Schedule

Name _____ Date _____ Location _____

1. What do you see as the overall objectives and goals of NTBG?
2. How reflective of the mission statement are the current goals and objectives of NTBG?
3. Who do you see as NTBG's primary audience and publics?
4. What is it that NTBG wants their publics to do?
5. How would you describe NTBG's communication philosophy?
6. What kind of communication products already exist at NTBG? (publications, outreach courses, etc.)
7. What are NTBG's primary external communication publications?
8. Are there any other publications NTBG plans to implement during the next year?

Questions asked about each individual publication

1. What is the objective of this publication?
2. Who is the intended audience?
3. Is there an intended secondary audience?
4. What is the action desired of the audience? Meaning, what is it you want readers to do?
5. Who are the intervening publics? Meaning, whose approval is required to actually get the publication or articles in print?
6. What is the main message to be conveyed? Does the message differ from publication to publication or from issue to issue?
7. How often is this publication distributed/revised?
8. How is this piece delivered/distributed?
9. Are there any accompanying collateral materials? (fact sheets, pamphlets, videos, letters, etc.)
10. What follow-up is in place for subscribers or in response to any inquiries generated by this publication?

APPENDIX D

NTBG's National Charter

The National Tropical Botanical Garden was chartered by Act of Congress on August 19, 1964, to form a nonprofit corporation with these purposes:

- (a) to establish, develop, operate, and maintain for the benefit of the people of the United States an educational and scientific center in the form of a tropical botanical garden or gardens, together with such facilities as libraries, herbaria, laboratories, and museums which are appropriate and necessary for encouraging and conducting research in basic and applied tropical botany;
- (b) to foster and encourage fundamental research with respect to tropical plant life and to encourage research and study of the uses of tropical flora in agriculture, forestry, horticulture, medicine, and other sciences;
- (c) to disseminate through publications and other media the knowledge acquired at the gardens relative to basic and applied tropical botany;
- (d) to collect and cultivate tropical flora of every nature and origin and to preserve for the people of the United States species of tropical plant life threatened with extinction;
- (e) to provide a beneficial facility which will contribute to the education, instruction, and recreation of the people of the United States.

Paul A. Cox
Executive Director and CEO

Michael J. Shea
General Counsel

William L. Theobald
Director Emeritus

Mateo Lettunich
President Emeritus

APPENDIX E

Content Analysis Coding Training Manual

Thank you for your willingness to help in the coding of this content analysis. The intent of this manual is to prepare you to code accurately, consistently, and confidently the constructs being measured regarding NTBG's primary publication materials.

To begin, I will share some background information about the National Tropical Botanical Garden (NTBG) and then explain how this content analysis fits into the overall thesis study. NTBG is a congressionally-authorized nonprofit organization dedicated to the conservation of tropical plant diversity, particularly rare and endangered species. NTBG includes four gardens and three preserves in Hawaii and one in south Florida. The sites total more than 1,600 acres. The organization primarily focuses on scientific research, plant exploration, propagation, and education.

In recent years, NTBG botanists, horticulturists, and educators have contributed significantly to their fields. They have assembled what is believed to be the largest collection of federally-listed endangered plant species in the world and made more than 1,200 plant exploration trips throughout the Pacific Islands. NTBG's staff of research scientists has been recognized for developing pioneering propagation techniques and growing protocols for more than 45 percent of the existing Hawaiian flora, including 248 rare and endangered species. They are also responsible for the establishment of the world's most comprehensive collection of breadfruit cultivars and new techniques developed to restore tropical dry forests, one of the world's most endangered ecosystems.

NTBG spreads its message through various types of external communication including a Web site, a magazine, brochures, newsletters, and other publications. The research questions to be answered in this thesis address whether NTBG's external communication materials are meeting specific objectives and goals for each publication and for the organization as a whole.

To assess the effectiveness of NTBG's external relations, the researcher is conducting a communication audit of the organization. The audit uses three methodologies: interviews, surveys, and content analysis. This content analysis design is based on results of data gathered during the interviews. It is specifically designed to answer the following research question: *How do NTBG's three primary publications fulfill the organization's purposes as outlined by the 1964 Charter?*

As you will see, the coding sheet questions are set up in direct relation with NTBG's Charter. This training manual is written to explain the purpose of the content analysis and to lead coders to consistent findings and a high percentage of intercoder reliability.

The first line of the coding sheet is as follows:

Publication: *Plant Talk* / *Allertonia* / NTBG Web site / *Plant Talk* Web site

You will either be coding one of six issues of *Plant Talk* magazine, one of three issues of the academic journal *Allertonia*, or the NTBG or *Plant Talk* Web site. Please circle which type of publication you are coding.

The second section asks for more details to help identify the specific issue or volume.

Date: _____
Issue: _____
Number of pages/links from home page: _____
Volume: _____
No: _____

The date, issue, number of pages, volume, and no. will be highlighted or marked on the print copies of *Plant Talk* and *Allertonia* before the coding session, making accurate responses to the above questions easier.

For the two web pages, please enter the date the site was retrieved for analysis and only fill in the third blank asking for number of links from the home page, which includes links to internal pages or external sites.

The rest of the questions are broken into five sections for each of the NTBG Charter purposes. The purpose statement for each category is written word-for-word to give the coder a base for answering the following questions.

When a question refers to the publication, it refers to the entire magazine, journal, or Web site. For the print materials that means from front cover to back cover—including ads. For the Web sites, that means only the internal links and pages of the site. If the site provides links to external sites, you do not need to analyze those sites.

The last question in each of the five sections is a potentially subjective question asking the coder to judge on a five-point Likert scale how well the publication either fulfills or promotes the objective stated in that section's charter purpose. The questions preceding this one should help you prepare for this response.

Finally, after all five sections, there is a set of five additional questions that ask you to analyze several other of NTBG's publications, including those already analyzed in the previous questions. These questions are mostly concerned with the appearance and style of these materials. They are designed to help measure whether the pieces have unified or connected designs.

APPENDIX F

Content Analysis Coding Sheets

Primary Content Analysis

Research question: *How do NTBG's three primary publications fulfill the organization's purposes as outlined by the 1964 Charter?*

Publication: *Plant Talk / Allertonia / NTBG Web site / Plant Talk Web site*

Date: _____

Issue: _____

Number of pages/links from home page: _____

Volume: _____

No: _____

I. *Charter purpose #1*: To establish, develop, operate, and maintain for the benefit of the people of the United States an educational and scientific center in the form of a tropical botanical garden or gardens, together with such facilities as libraries, herbaria, laboratories, and museums which are appropriate and necessary for encouraging and conducting research in basic and applied tropical botany.

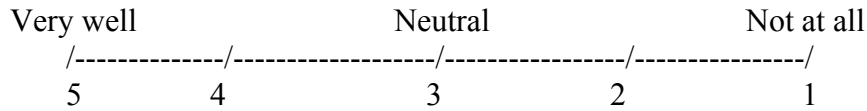
- A. Does this publication identify NTBG as a nonprofit organization? Y / N
- B. Does this publication refer to NTBG as an institution for the benefit of the people of the United States? Y / N
- C. Does this publication make any reference to NTBG as an educational and scientific center? Y / N
- D. Does this publication generally encourage research in basic and applied tropical botany? Y / N
- E. F. Number of times the following NTBG facilities are mentioned in the publication:

Libraries _____

Herbaria _____

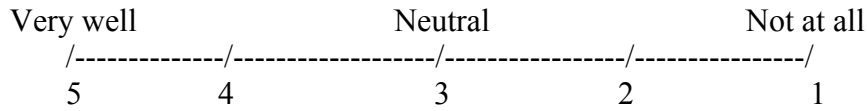
Laboratories _____

Museums _____



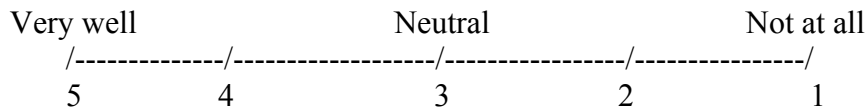
IV. *Charter purpose #4*: To collect and cultivate tropical flora of every nature and origin and to preserve for the people of the United States species of tropical plant life threatened with extinction.

- A. Does this publication discuss NTBG’s effort to collect and cultivate tropical flora? Y / N
- B. Does this publication mention or imply that NTBG plays a role in plant preservation? Y / N
- C. Does the publication discuss NTBG’s mission to preserve species of tropical plant life threatened with extinction? Y / N
- D. Does it mention preservation efforts are for the benefit of the people of the United States? Y / N
- E. With the use of the scale below, rate how well this publication promotes Charter purpose #4.



V. *Charter purpose #5*: To provide a beneficial facility which will contribute to the education, instruction, and recreation of the people of the United States.

- A. Does this publication make reference to NTBG as an educational facility? Y / N
- B. Does the publication make reference to NTBG as an instructional facility? Y / N
- C. Does the publication make reference to NTBG as a recreational facility? Y / N
- D. How many times is the title “NTBG” or “National Tropical Botanical Garden” written in this publication? _____
- E. With the use of the scale below, rate how well this publication promotes Charter purpose #5.



Secondary Content Analysis

Additional Questions About All NTBG Publications

(Rack cards, brochures, tour booklets, newsletter, *Allertonia*, *Plant Talk*, Web sites)

Publication _____

Date _____

1. Is there an official NTBG logo visible in the publication? Y / N
2. Is there another garden logo visible in the publication? Y / N If so, which logo shows up in the most notable place? _____
3. Is NTBG's mission printed in the piece? Y / N
4. Is there another garden mission printed on the piece? Y / N If so, which mission shows up in the most noticable place? _____
5. Does the overall look (design, images, paper, size) share similarities with the other analyzed publications? Y / N

Explain: _____

APPENDIX G

Course Participant Questionnaire Instrument

Course Participant Questionnaire Instruction:

This questionnaire asks your relationships with and perceptions of the National Tropical Botanical Gardens (NTBG). You do not have to have a direct contact with NTBG to answer these questions. Your perceptions of NTBG's relationship with the general public can be your answers too.

Thank you very much.

Please circle your responses to the following questions. If you don't know or have no response to an item, please circle 4.

1. **NTBG treats people like me fairly and justly.**

Strongly Agree 1 | 2 | 3 | 4 | 5 | 6 | 7 Strongly Disagree

2. **Whenever NTBG makes an important decision, I know it will be concerned about people like me.**

Strongly Agree 1 | 2 | 3 | 4 | 5 | 6 | 7 Strongly Disagree

3. **I believe that NTBG takes the opinions of people like me into account when making decisions.**

Strongly Agree 1 | 2 | 3 | 4 | 5 | 6 | 7 Strongly Disagree

4. **Sound principles seem to guide NTBG's behavior.**

Strongly Agree 1 | 2 | 3 | 4 | 5 | 6 | 7 Strongly Disagree

5. **I can see that NTBG wants to maintain a relationship with people like me.**

Strongly Agree 1 | 2 | 3 | 4 | 5 | 6 | 7 Strongly Disagree

6. **There is a long-lasting bond between NTBG and people like me.**

Strongly Agree 1 | 2 | 3 | 4 | 5 | 6 | 7 Strongly Disagree

7. **Both the organization and people like me benefit from the relationship.**

Strongly Agree 1 | 2 | 3 | 4 | 5 | 6 | 7 Strongly Disagree

8. **Generally speaking, I am pleased with the relationship NTBG has established with people like me.**

Strongly Agree 1 | 2 | 3 | 4 | 5 | 6 | 7 Strongly Disagree

9. **I feel people like me are important to NTBG.**

Strongly Agree 1 | 2 | 3 | 4 | 5 | 6 | 7 Strongly Disagree

10. **NTBG seems to be the kind of organization that invests in the community.**

Strongly Agree 1 | 2 | 3 | 4 | 5 | 6 | 7 Strongly Disagree

11. **I am aware that NTBG is involved in the community.**

Strongly Agree 1 | 2 | 3 | 4 | 5 | 6 | 7 Strongly Disagree

12. **I think NTBG is very dynamic in maintaining good relationships with the community.**

Strongly Agree 1 | 2 | 3 | 4 | 5 | 6 | 7 Strongly Disagree

13. **NTBG has the ability to attract, develop, and keep talented people.**

Strongly Agree 1 | 2 | 3 | 4 | 5 | 6 | 7 Strongly Disagree

14. **NTBG uses the organization's visible and invisible assets very effectively.**

Strongly Agree 1 | 2 | 3 | 4 | 5 | 6 | 7 Strongly Disagree

15. **NTBG is financially sound enough to help others.**

Strongly Agree 1 | 2 | 3 | 4 | 5 | 6 | 7 Strongly Disagree

16. **NTBG is innovative in its organization culture.**

Strongly Agree 1 | 2 | 3 | 4 | 5 | 6 | 7 Strongly Disagree

17. **Because of NTBG, I have a better understanding of global plant conservation issues.**

Strongly Agree 1 | 2 | 3 | 4 | 5 | 6 | 7 Strongly Disagree

18. **Because of NTBG, I want to learn more about plant conservation.**

Strongly Agree 1 | 2 | 3 | 4 | 5 | 6 | 7 Strongly Disagree

19. **Because of my association with NTBG, I am more aware of the role it plays in plant conservation.**

Strongly Agree 1 | 2 | 3 | 4 | 5 | 6 | 7 Strongly Disagree

20. **Because of NTBG, I want to help others become more aware of plant conservation.**

Strongly Agree 1 | 2 | 3 | 4 | 5 | 6 | 7 Strongly Disagree

APPENDIX H

Garden Visitor Questionnaire Instrument

Garden Visitor Questionnaire Instruction:

This questionnaire asks your relationships with and perceptions of the National Tropical Botanical Gardens (NTBG). You do not have to have a direct contact with NTBG to answer these questions. Your perceptions of NTBG's relationship with the general public can be your answers too.

Thank you very much.

Please circle your responses to the following questions:

1. NTBG treats people like me fairly and justly.

Strongly Agree 1 | 2 | 3 | 4 | 5 | 6 | 7 Strongly Disagree

2. Whenever NTBG makes an important decision, I know it will be concerned about people like me.

Strongly Agree 1 | 2 | 3 | 4 | 5 | 6 | 7 Strongly Disagree

3. I believe that NTBG takes the opinions of people like me into account when making decisions.

Strongly Agree 1 | 2 | 3 | 4 | 5 | 6 | 7 Strongly Disagree

4. Sound principles seem to guide NTBG's behavior.

Strongly Agree 1 | 2 | 3 | 4 | 5 | 6 | 7 Strongly Disagree

5. I can see that NTBG wants to maintain a relationship with people like me.

Strongly Agree 1 | 2 | 3 | 4 | 5 | 6 | 7 Strongly Disagree

6. There is a long-lasting bond between NTBG and people like me.

Strongly Agree 1 | 2 | 3 | 4 | 5 | 6 | 7 Strongly Disagree

7. Both the organization and people like me benefit from their relationship.

Strongly Agree 1 | 2 | 3 | 4 | 5 | 6 | 7 Strongly Disagree

8. Generally speaking, I am pleased with the relationship NTBG has established with people like me.

Strongly Agree 1 | 2 | 3 | 4 | 5 | 6 | 7 Strongly Disagree

9. I feel people like me are important to NTBG.

Strongly Agree 1 | 2 | 3 | 4 | 5 | 6 | 7 Strongly Disagree

10. NTBG seems to be the kind of organization that invests in the community.

Strongly Agree 1 | 2 | 3 | 4 | 5 | 6 | 7 Strongly Disagree

11. I am aware that NTBG is involved in the community.

Strongly Agree 1 | 2 | 3 | 4 | 5 | 6 | 7 Strongly Disagree

12. I think NTBG is very dynamic in maintaining good relationships with the community.

Strongly Agree 1 | 2 | 3 | 4 | 5 | 6 | 7 Strongly Disagree

13. NTBG has the ability to attract, develop, and keep talented people.

Strongly Agree 1 | 2 | 3 | 4 | 5 | 6 | 7 Strongly Disagree

14. NTBG uses organization's visible and invisible assets very effectively.

Strongly Agree 1 | 2 | 3 | 4 | 5 | 6 | 7 Strongly Disagree

15. NTBG is financially sound enough to help others.

Strongly Agree 1 | 2 | 3 | 4 | 5 | 6 | 7 Strongly Disagree

16. NTBG is innovative in its organization culture.

Strongly Agree 1 | 2 | 3 | 4 | 5 | 6 | 7 Strongly Disagree

17. Because of NTBG, I want to learn more about plant conservation.

Strongly Agree 1 | 2 | 3 | 4 | 5 | 6 | 7 Strongly Disagree

18. Because of NTBG, I have an increased interest in botanical research.

Strongly Agree 1 | 2 | 3 | 4 | 5 | 6 | 7 Strongly Disagree

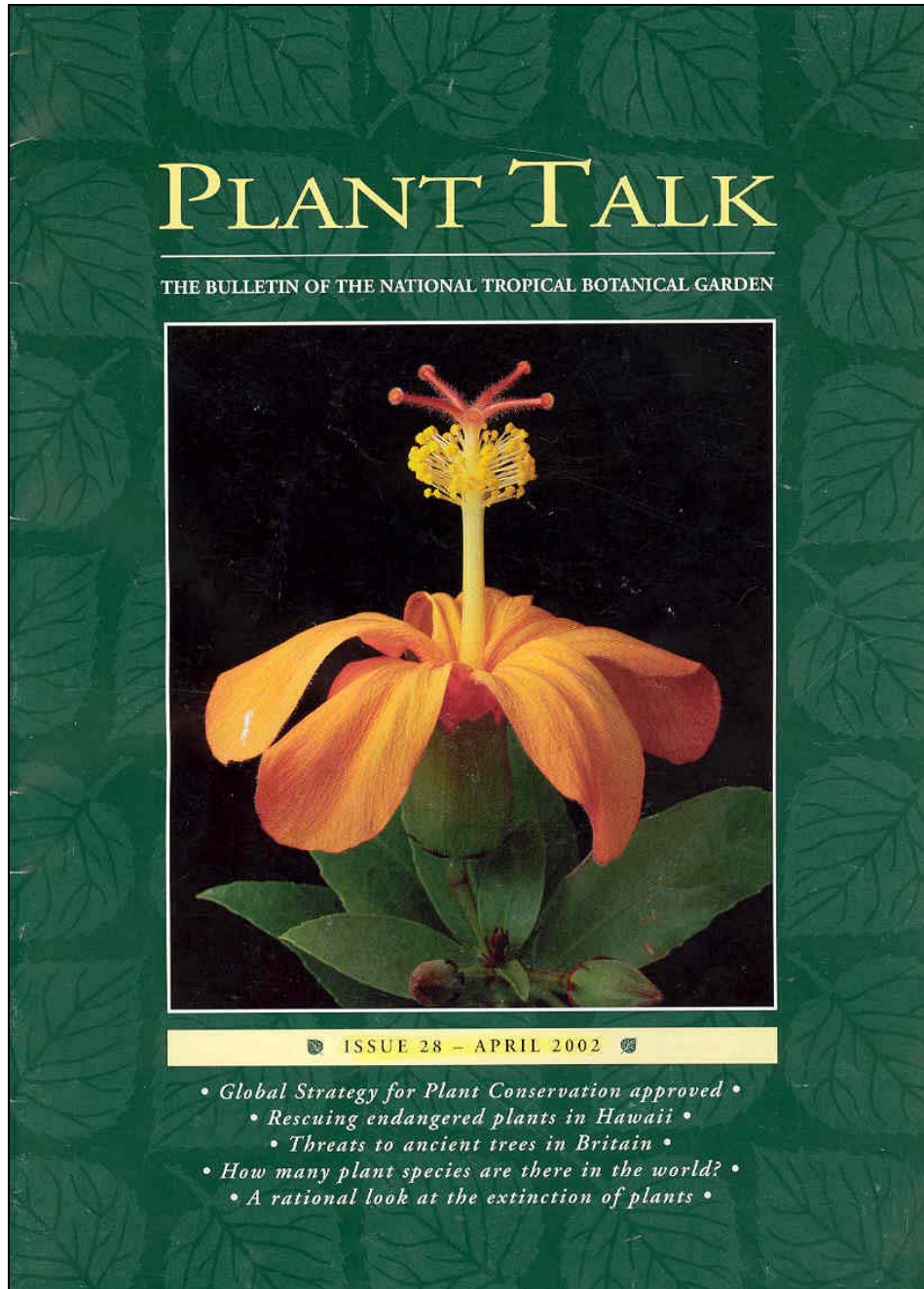
19. Because of NTBG, I have a greater appreciation for public education.

Strongly Agree 1 | 2 | 3 | 4 | 5 | 6 | 7 Strongly Disagree

APPENDIX I

Images from NTBG's Publications

Figure 1: *Plant Talk* magazine



(Actual size 8.25 x 11.5 in.)

Figure 2: *Plant Talk* magazine's Web site (home page)

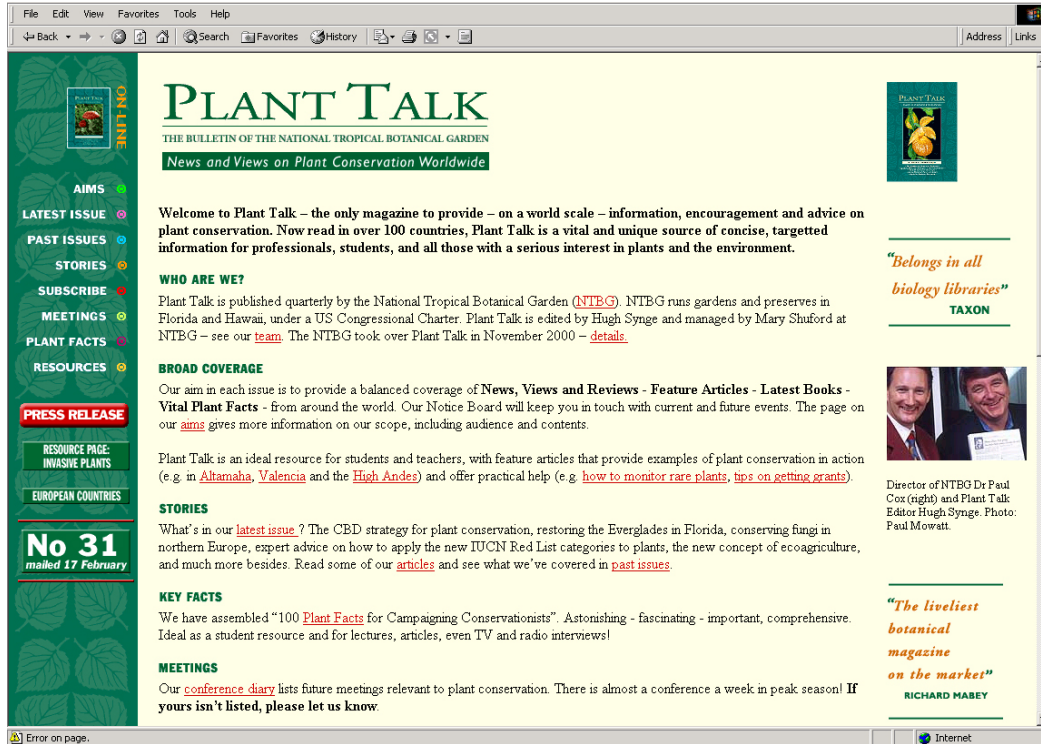


Figure 3: NTBG's Web site (home page)

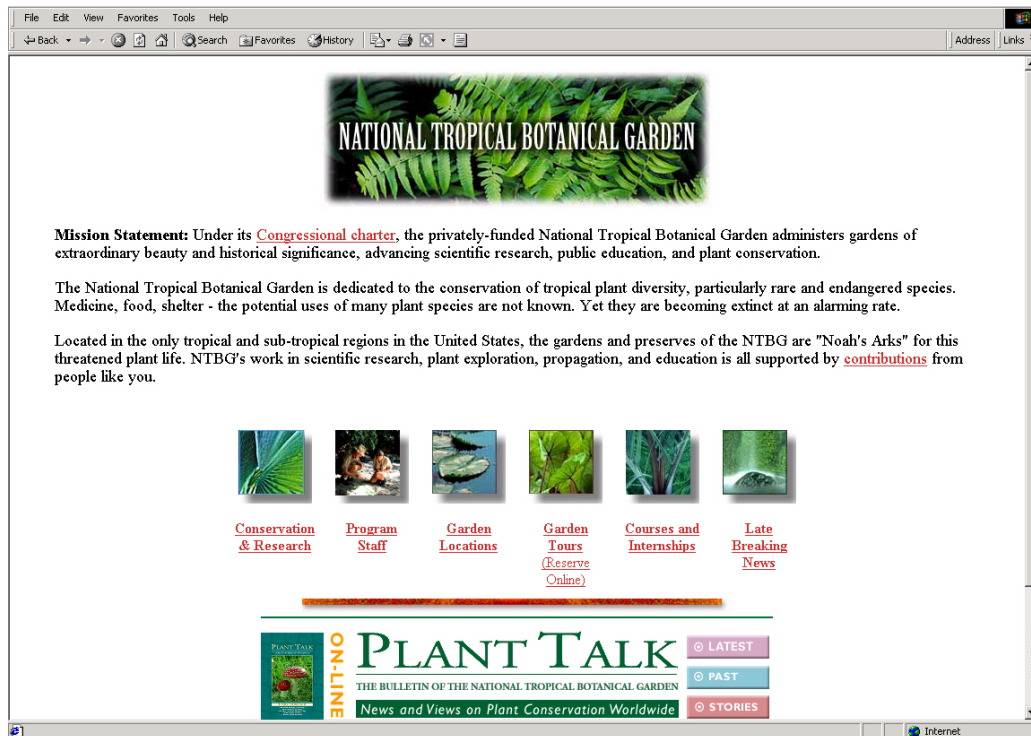
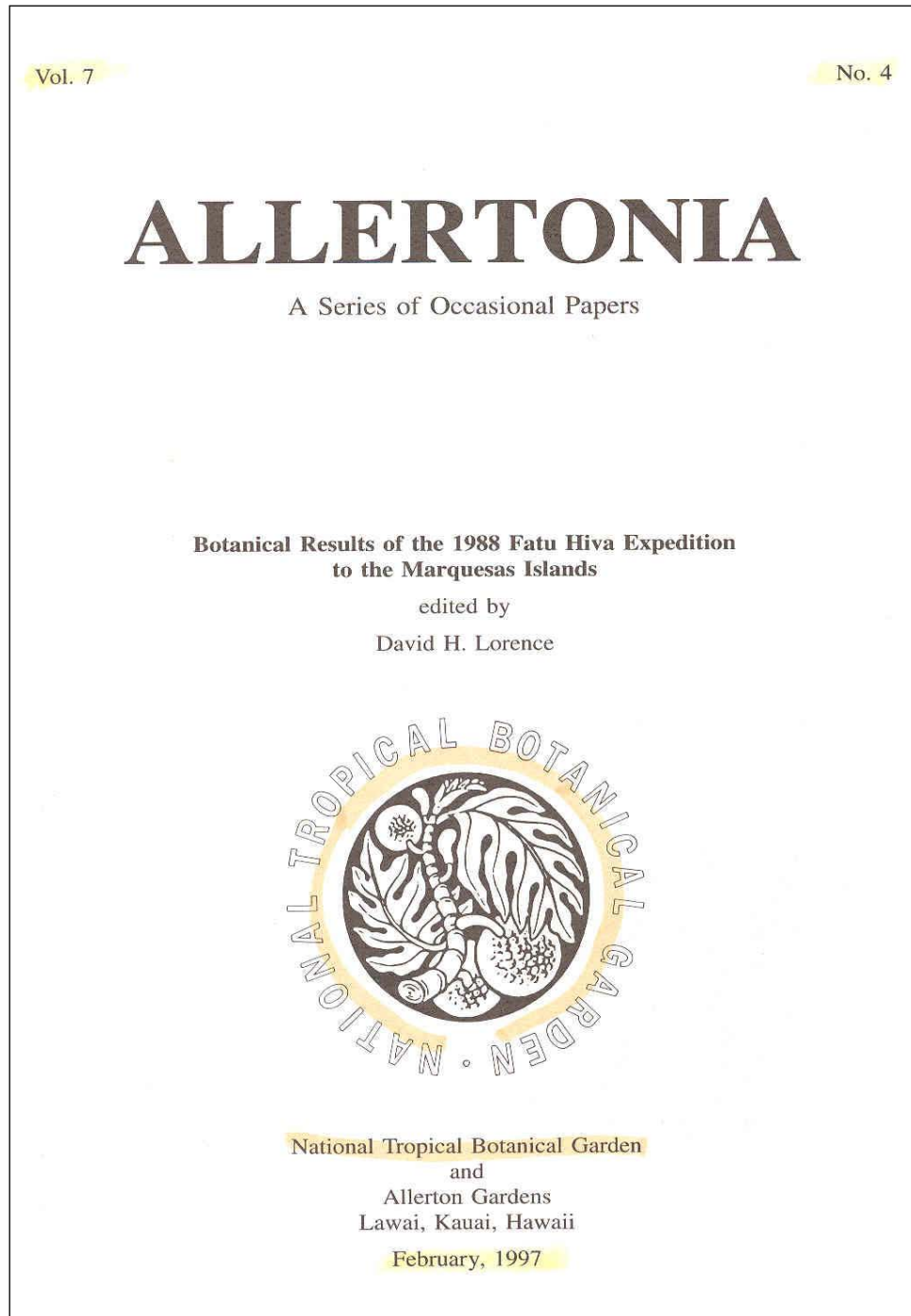


Figure 4: *Allertonia* journal



(Actual size 6.75 x 10 in.)

Figure 5: NTBG's internal newsletter, *Garden Chronicles*



Garden Chronicles
 Newsletter of
 Science-Education-Conservation

May - August, 2001
Editor: Carol A. Beardmore
Volume 2, Issue 2

In this issue:

Garden Visitors.....1

Acacia Lab delights Professors.....2

"How I spent my summer".....2/3

Scientific Conference Summaries.....4

National Park of American Samoa research project.....5/6

VISITORS TO THE GARDEN

The new Director of the Center for Plant Conservation, **Dr. Kathryn Kennedy** visited Science and Conservation staff, and viewed the living collections.

Tim Motley, Mitch Levesque and Hugh Cross from the New York Botanical Garden visited the Herbarium, Dr. Lorence, and the living collections, as did **Patricia Fuentes** from Columbia University.

Alan Carle, from The Botanical Ark, Queensland, Australia visited our Zingiberales plantings and collected seeds and cuttings of various plants as part of an ongoing exchange with the Botanical Ark. He is a Board member and former president of the Heliconia Society International.

Several site visits, evaluations and consultations concerning the living collections were conducted, by: **Dr. Janice Uchida**, UH Plant Pathologist, **Walter Nagamine**, Entomologist with the Hawaii State Department of Agriculture, and **Craig Kanasai**, State Invasive Weed Department.

Tristan Armstrong, from Landcare New Zealand spent a couple of days at the Garden after the Society for Conservation Biology conference in Hilo. While here he had a brief look at native Hawaiian *Ranunculus* and was able to remove leaf material for DNA analysis from a couple of species.

In this issue:

Interns were hands-on and minds-on.....8/9

Letter from Director Emeritus Dr. Bill Theobald.....9

Living collections Garden development planning.....10

Latest Plant Talk.....10

NTBG to the rescue of threatened *Hibiscus brackenridgei*.....11



Photo: Diane Reagane

Professor Tomlinson re-energizes Biology teaching.....7



Photo: Steve Fernman

National Tropical Botanical Garden, 3530 Papalina Road, Kalaheo, Hawaii 97641
 Telephone: (808) 332-7324 Fax: (808) 332-9765 www.ntbg.org

(Actual size 8.5 x 11 in.)

Figure 6: Limahuli Garden Tour Booklet

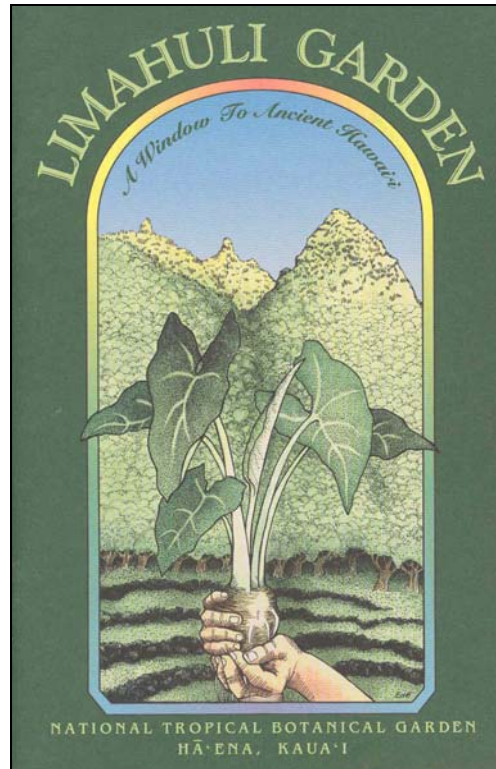
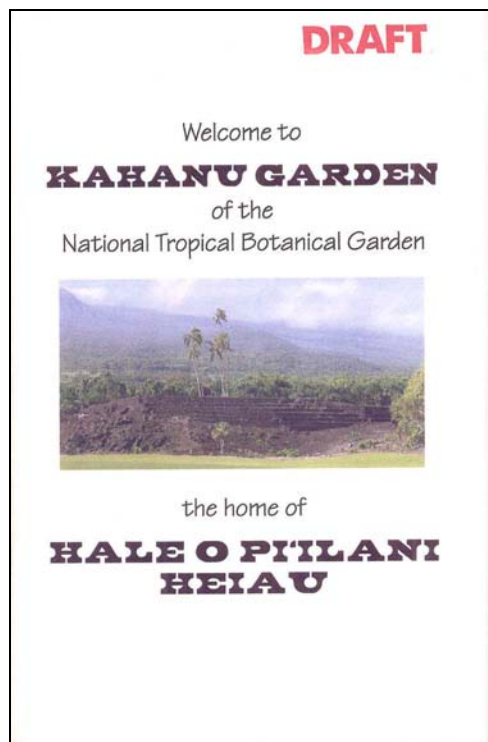


Figure 7: Kahanu Garden Tour Booklet




(Actual size of both 5.5 x 8.5 in.)

Figure 8: McBryde Garden Tour Pamphlets and Map

NATIONAL TROPICAL BOTANICAL GARDEN

Canoe Plants of Ancient Polynesia

a self-guided tour of
Canoe Garden, McBryde Garden




The Canoe Walk
Less than 2000 years ago the Polynesians traveled across the Pacific and settled in Hawai'i. These ancient people sailed in their canoes and brought with them the most vital of things, which included 32 plants they have used in many fascinating ways. These plants provided food, medicine, building materials, clothing and shelter, and were used for traditional ceremonies. You should allow **1 hour** to explore this exciting section of the Garden.

NATIONAL TROPICAL BOTANICAL GARDEN

A Walk Among the Natives

a self-guided tour of the Upper
Native Hawaiian Section, McBryde Garden



Explore the native plants of Hawai'i
On this tour you will be introduced to some of the most extraordinary native Hawaiian plants preserved in this garden. You will discover how these plant species initially arrived in Hawai'i and how they have through time become endangered and threatened by extinction. You will learn of the importance of conservation of native plant species for research and education which will benefit humankind. You should allow 1 hour to discover this unique section of the Garden.

NATIONAL TROPICAL BOTANICAL GARDEN

Reading Palms

A self-guided tour of the
Palm Walk in the McBryde Garden




Pritchardia remota—endemic to Nihoa

The Palm Walk
The Palm Walk will introduce you to a variety of palms and their uses. The palm family, *Arecaceae*, is considered among the most important plant families to humankind after the grasses and legumes. Palms provide products such as oils, fibers, thatch, waxes, fruit, palm-hearts, medicines, building materials, and furniture, to name a few. They are also important as ornamentals and landscaping plants. The palm family includes about 212 genera with 2,750 species distributed throughout the tropics and subtropics of the world. Although palms are thought of as solitary plants, they can also branch and grow as vines or multiple trunked plants. Palms are a highly threatened family. The National Tropical Botanical Garden is actively supporting palm conservation in Hawaii and the Pacific region.

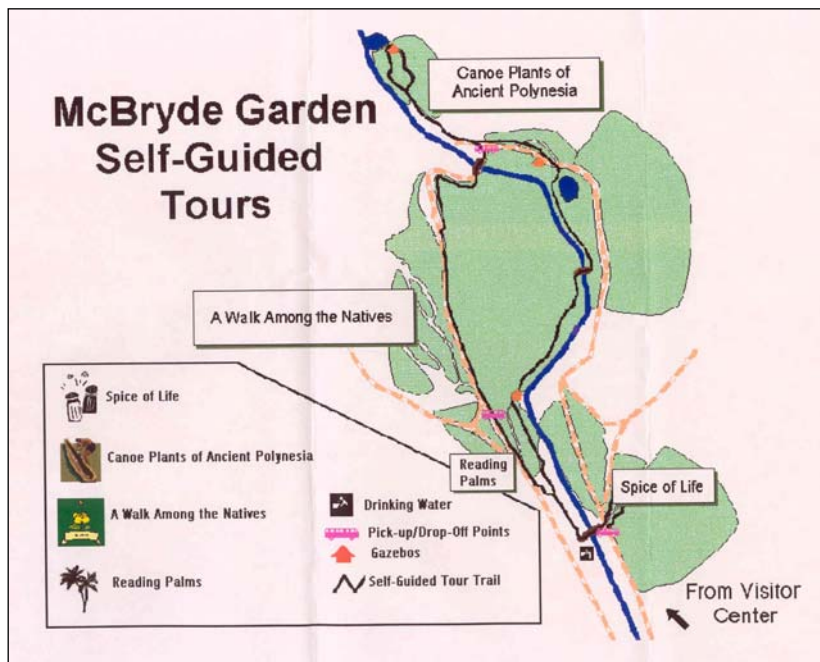
NATIONAL TROPICAL BOTANICAL GARDEN

Spice of Life

a self-guided tour of
Maidenhair Falls, McBryde Garden

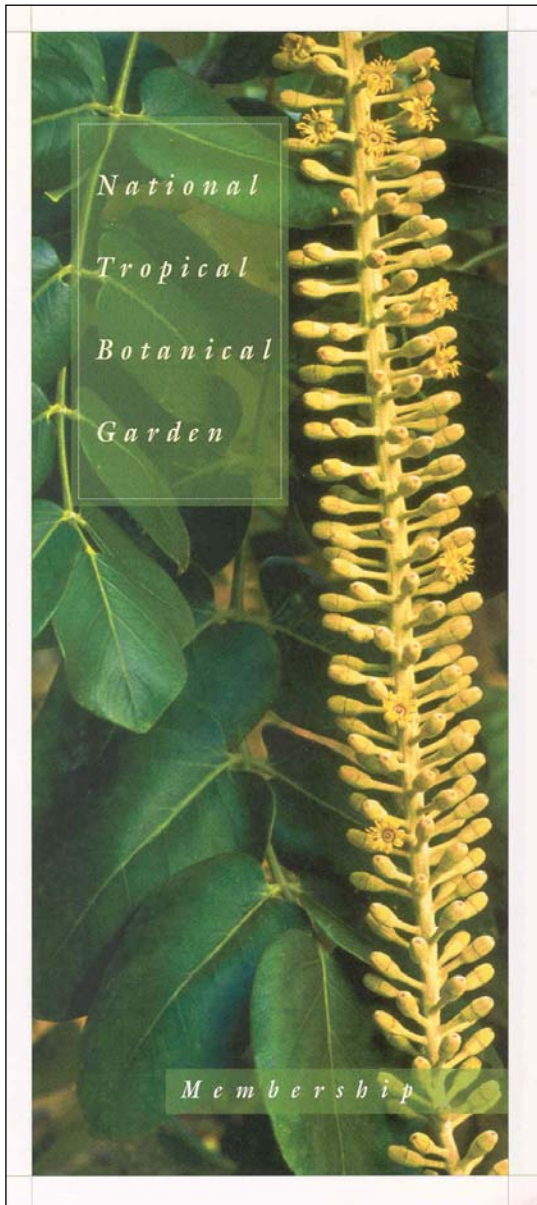


Take a Spice Walk
Maidenhair Falls is full of many exotic plants, but also some that may be familiar to you. Plants along the loop trail include those important to the cut flower industry, timber trade, and to the food and spice markets. You should allow **45 minutes** to explore the sights, smells, textures, and colors of this delightful section of the Garden.



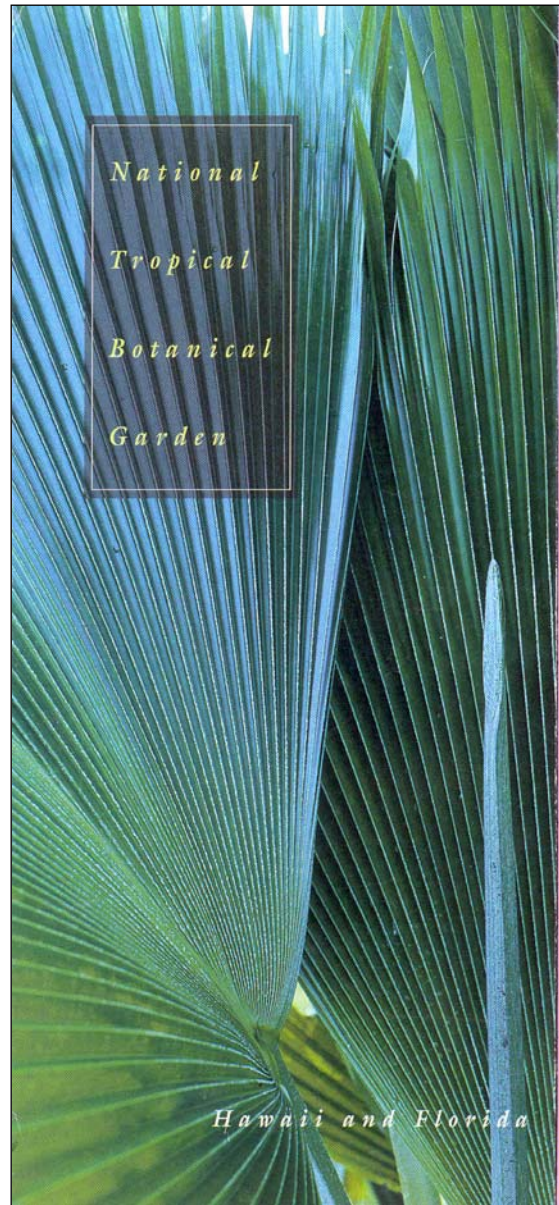
(Actual size of pamphlets 3.5 x 8.5 in.; map 8.5 x 11 in.)

Figure 9:
NTBG Membership Brochure



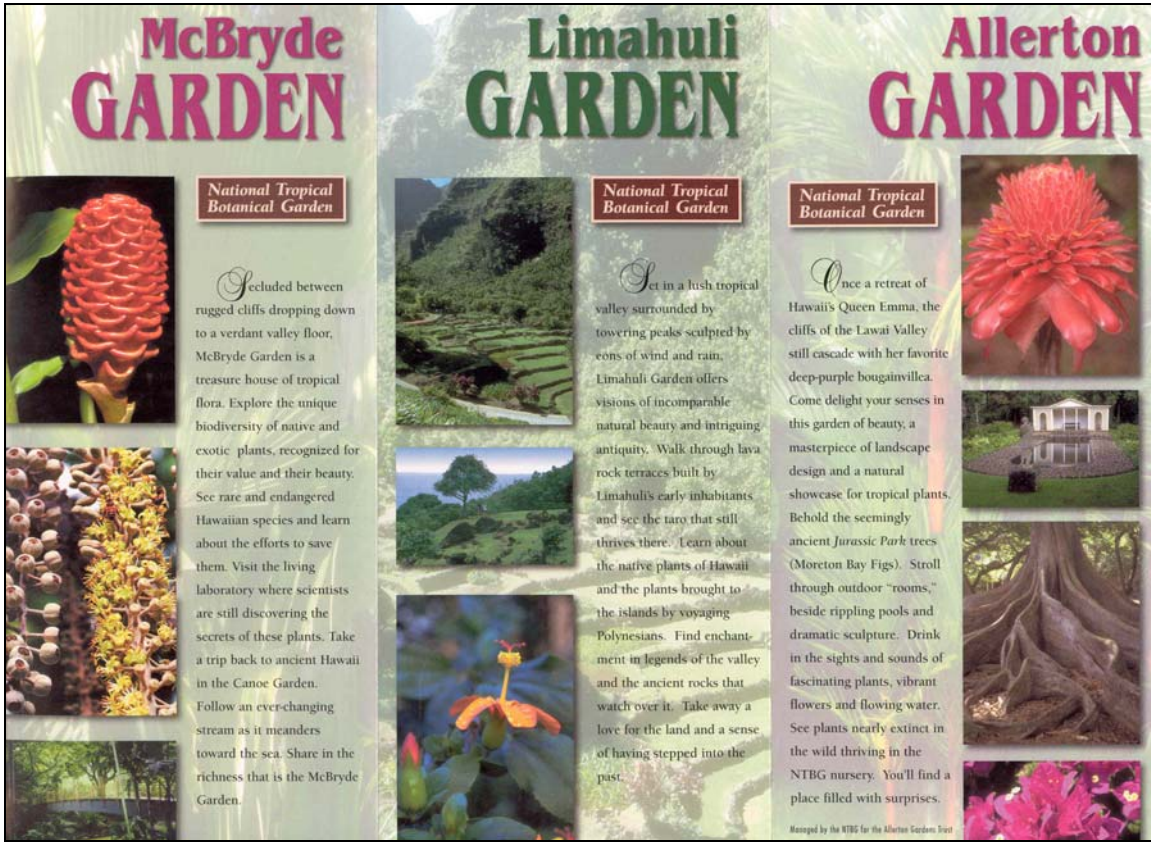
(Actual size 4 x 8.75 in.)

Figure 10:
NTBG General Information Brochure



(Actual size 4 x 9 in.)

Figure 11: Combined Rack Card for Allerton, McBryde, and Limahuli Gardens



(This a three-fold piece that folds to size 4 x 9 in.)

Figure 12: Kahanu Garden Rack Card

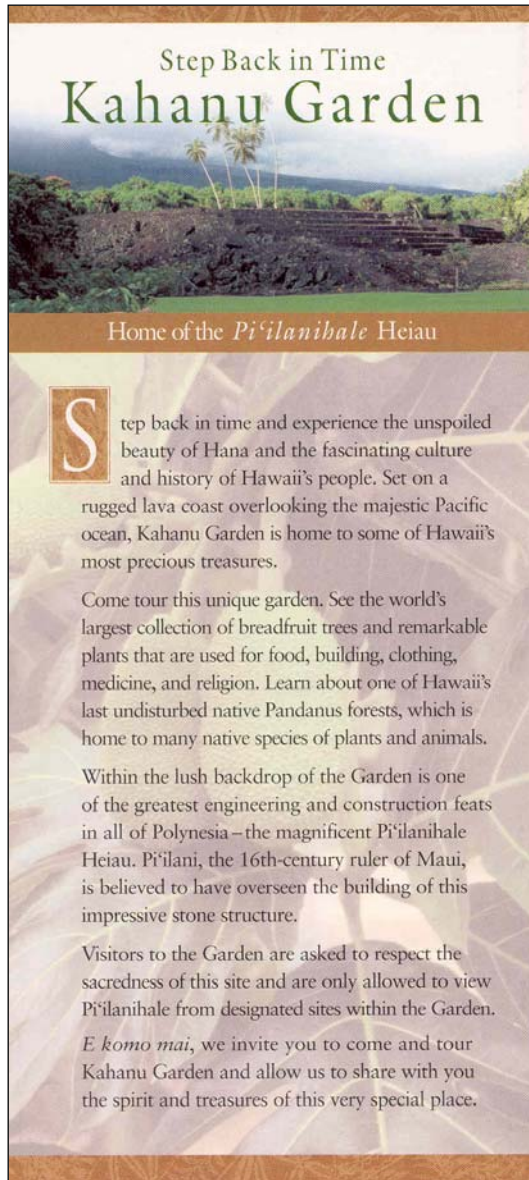
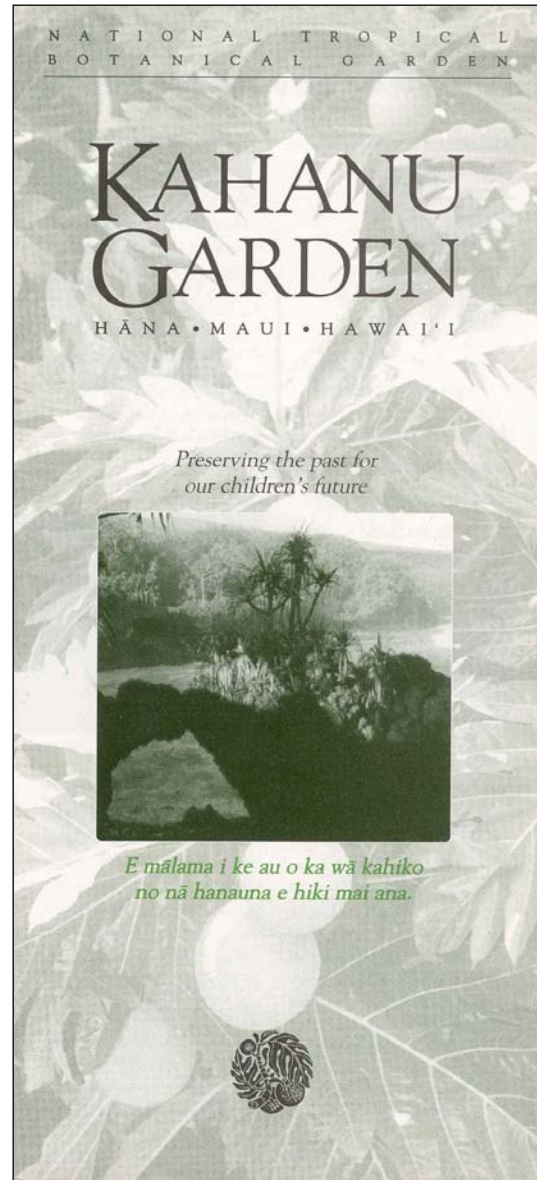


Figure 13: Kahanu Garden Brochure



(Actual sizes for both 4 x 9 in.)

Figure 14: Allerton Garden Brochure

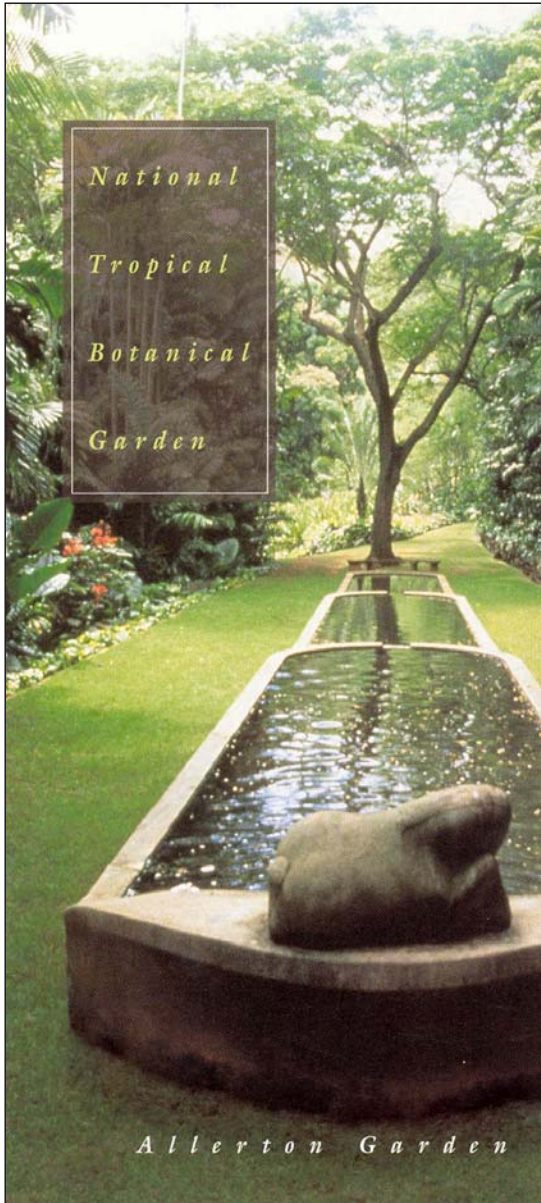
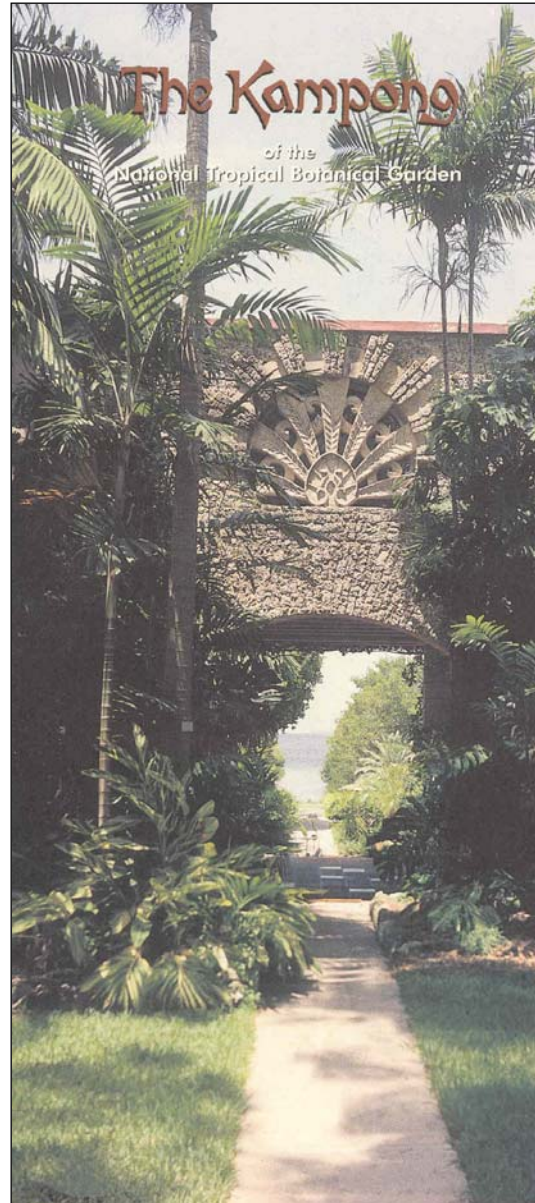


Figure 15: Kampong Garden Brochure



(Actual sizes of both 4 x 9 in.)