



Visitor Experiences at the *Orchid Express*

Hosted at the  
National Museum of Natural History by  
Horticulture Services Division, Smithsonian Institution and  
The United States Botanical Garden

Based on a survey conducted by the

Office of Policy and Analysis  
Smithsonian Institution  
Washington, DC

June 2005

## *Table of Contents*

Preface.....	3
Introduction .....	4
2005 Study.....	5
Major Findings.....	6
Visitor Comments .....	12
Discussion.....	13
Appendix A .....	14
Appendix B.....	19
Image Credits.....	22



Visitors coming to the National Museum of Natural History (NMNH) between the dreary days of early December 2004, with the following hectic holiday period, and the annual groups of school children to the nation's capital, had the opportunity to escape into a wondrous world of sight and sound: the 11<sup>th</sup> annual orchid show. This year's theme combined the delicate flowers with model trains in the *Orchid Express*.

Nancy Bechtol, Office of Facilities Management Director, requested this study as a follow-up to a study conducted in 2003. I would like to thank both Nancy and Barbara Faust, Associate Director-Horticulture Services Division, who facilitated the study. In addition to the Office of Policy and Analysis (OP&A) study team, Amy L. Marino and Zahava D. Doering, who designed and implemented the study and wrote this report, David Karns provided extensive analytic support and rigorous comments.

We also appreciate the cooperation of more than 600 visitors who participated in the survey and shared their perceptions with us. They took the time from smelling the flowers and observing the trains to participate in the survey in order to improve their visits and those of others to subsequent exhibitions.

Carole M. P. Neves, Director  
Office of Policy and Analysis

## Introduction

The Smithsonian's Horticulture Services Division (HSD) and the United States Botanic Garden (USBG) annually collaborate to display their orchid collections. The 11th annual orchid show, the *Orchid Express* was hosted by the National Museum of Natural History from December 4, 2004 to May 1, 2005. This year's exhibition, featuring approximately 200 species of orchids, told the story of how these plants were discovered, collected from the wild, transported, cultivated, hybridized, propagated, and finally mass marketed to worldwide garden enthusiasts.

The *Orchid Express*, a 5,600-square-foot exhibition, presented the history of orchids in eight vignettes. Model trains guided visitors through miniature and life-size dioramas, whose themes included exploration, collection, production and conservation.

A 2-6-0 Mogul Steam Locomotive and an ICE Train (Inner City Express) ran continuously on separate tracks. Both tracks were close to two hundred feet in length with one track three feet above the floor while the upper track was nine feet high.

The 2003 exhibition, *Nature's Jewels*, was held at the Smithsonian in a 5,000 square-foot gallery in the Arts & Industries Building (AIB) from January 18 to May 26. Its theme was the relationship between orchids and butterflies. In addition to the orchid display, the exhibition included a 1,000 square-foot free-flight butterfly conservatory.

The Office of Policy and Analysis conducted a survey of visitors to *Nature's Jewels*.<sup>1</sup> Its purpose was to establish baseline evaluation data and provide information for planning the 2005 exhibition. The study conducted in 2005, reported here, had two objectives: to present an assessment of the *Orchid Express* and to compare the results with the 2003 survey results.

---

<sup>1</sup> A Survey of Visitors to *Nature's Jewels: A Living Exhibit of Orchids and Butterflies*. Office of Policy and Analysis, May 2003. Accessed on May 25, 2005 at <http://www.si.edu/opanda/Reports/OBSurvey.pdf>

## *The 2005 Study*

Data were collected by means of a one-page, self-administered questionnaire distributed to a representative sample of visitors as they exited the exhibition. Data were collected on six days between April 2 and April 10, 2005. In the course of 18 hours of data collection, a total of 931 visitors were intercepted and 605 questionnaires completed for a response rate of 65 percent. The questionnaire included questions about visitor characteristics, background interests, activities and satisfying experiences in the exhibition, and assessments of exhibition elements. When possible, the 2005 survey replicated questions asked in 2003.



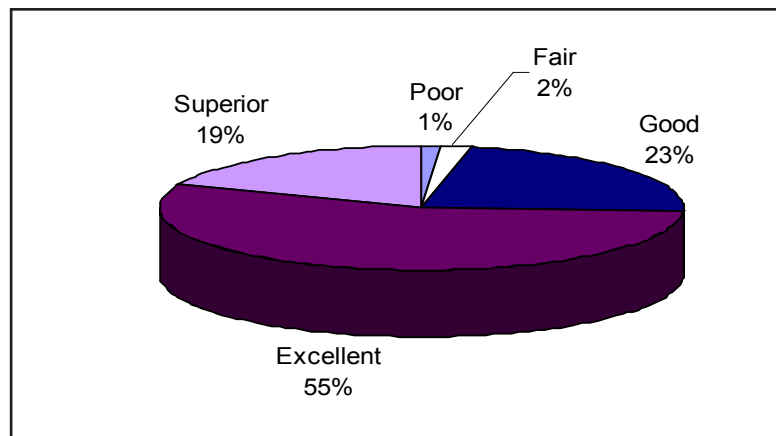
## Major Findings

### Overall satisfaction

When asked to rate their visits to the *Orchid Express*, 19 percent of visitors gave the exhibition the highest scale rating (“superior”) and 56 percent said that they found it “excellent” (Figure 1). A precise comparison with 2003 is not possible, because different rating scales were used in 2003 and 2005.<sup>2</sup> The data suggest a somewhat lower level of satisfaction compared with *Nature’s Jewels*. Comparing this exhibition to 15 other Smithsonian exhibitions that measured similarly, i.e., using the same categories as in the *Orchid Express*, puts it in the middle third when they are rated on the basis of “superior,” and the middle third when ranked by the percentage of visitors who were less than satisfied, that is, rated the exhibition “poor,” “fair,” or “good.”<sup>3</sup> It is near the top when ranked by the percentage of visitors who rated it as “excellent.” Put another way, the *Orchid Express* was considered above average by most visitors.

In the context of a visit to NMNH, the *Orchid Express* received similar ratings to those given to the whole museum in summer 2004. At the time, 21 percent of visitors to NMNH rated their overall visit as “superior” and 51 percent as “excellent.”<sup>4</sup>

Figure 1: *Orchid Express* Exhibition Ratings



<sup>2</sup> The change was made for consistency with surveys conducted by OP&A since 2003, especially a Smithsonian-wide survey conducted in summer 2004. The current satisfaction scale has five points. The scale and scores for *Orchid Express* are: Superior (19%), Excellent (56%), Good (23%), Fair (2%), and Poor (<1%). The former scale had four points. The scale and scores for *Nature’s Jewels* were: More than fully satisfied (44%), Fully satisfied (40%), Satisfied (14%) and Somewhat dissatisfied (2%).

<sup>3</sup> Data on file, OP&A.

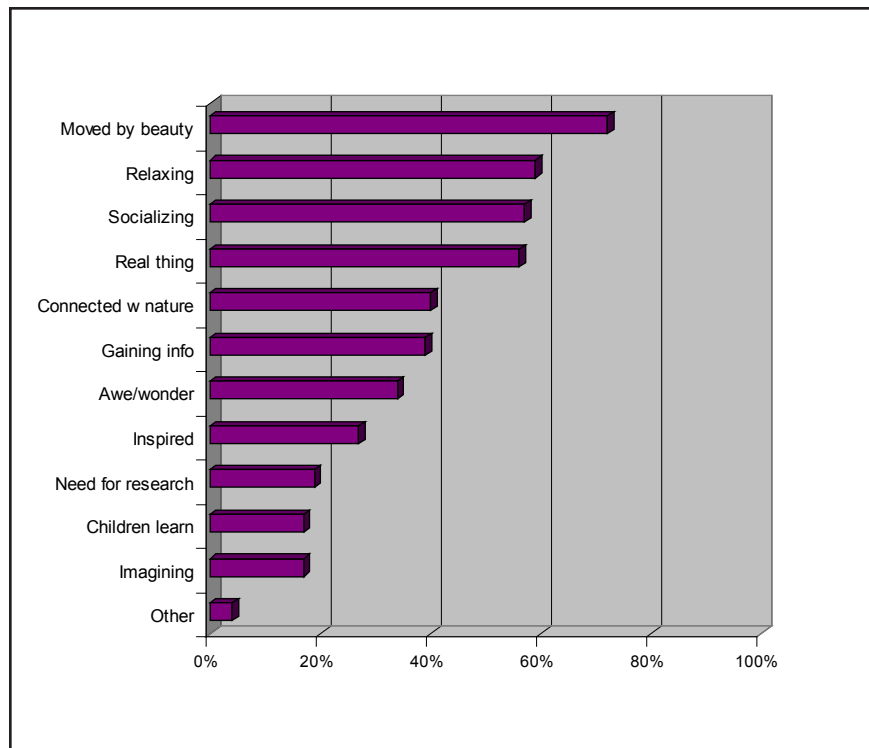
<sup>4</sup> Results of the 2004 Smithsonian-wide Survey of Museum Visitors. Statistical Tables. Office of Policy and Analysis, October 2004.



## Aesthetic, object focused and social experiences

“Being moved by beauty,” “relaxing,” “spending time with friends/family,” and “seeing the real thing” were reported as satisfying experiences for over half of the visitors (Figure 2). Visitors who selected “being moved by beauty,” or “seeing the real thing” as one of their satisfying experience were somewhat more likely to rate the exhibition as “superior” compared to those who did not select these experiences.

Figure 2: Satisfying Experiences in *Orchid Express*



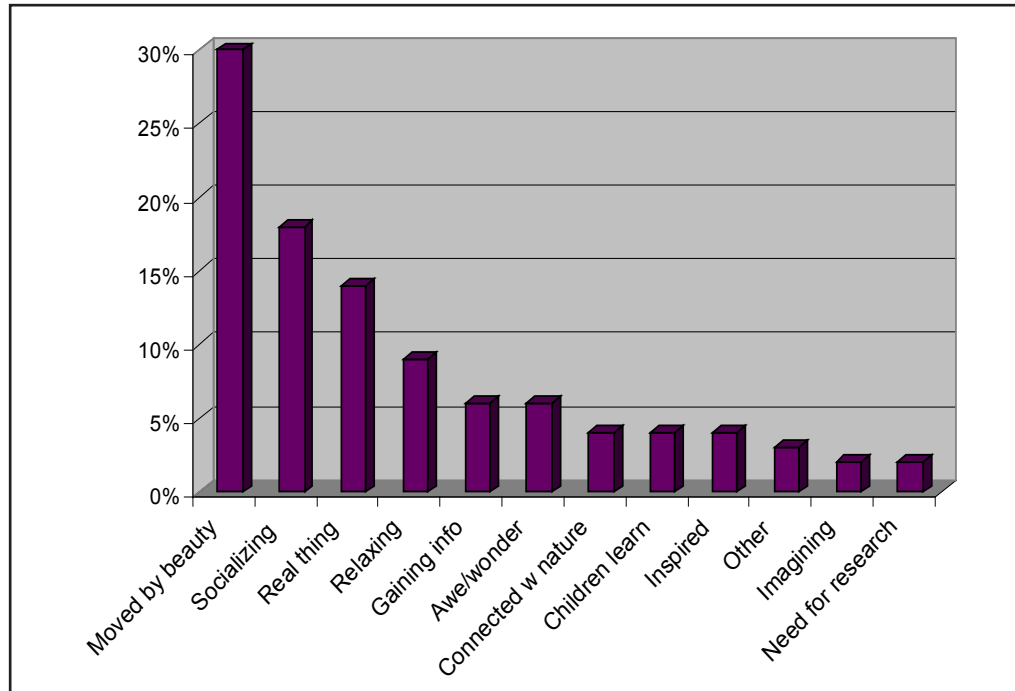
When asked to select the experience that they found most satisfying, four experiences, but in somewhat different order, were selected by 71 percent of the visitors (Figure 3). “Being moved by beauty” however, was selected by nearly one-third (30%). Individuals who selected these four experiences were more likely to rate the exhibition as “superior.”

The 11 experiences can be combined into three broad categories: “orchids,” “science,” and “social.”<sup>5</sup> Visitors who selected “orchid” category satisfying experiences (including about half of the women visiting and older (over 59) visitors) were more likely to rate the exhibition as

<sup>5</sup> The first includes “beauty,” “real thing,” “awe and wonder,” and “inspired,” the second is “information,” “nature,” and “scientific research,” and the third is “time with family/friends,” “relaxing,” “children learn,” and “recalling other times or places.”

“superior,” while those primarily reporting a “social” experience rated it as “good.” This group includes a high proportion of multi-generational groups.

Figure 3: Most Satisfying Experience in *Orchid Express*



### Interest in orchids and trains

Visitors were asked whether they gardened, grew orchids or attended orchid exhibitions. They were also asked to rate their knowledge of orchids prior to seeing the exhibition. The results indicate that of visitors who report gardening (52%), almost two-thirds have grown orchids (31% of all visitors). (The high percentage of gardeners is not unique to the exhibition; the National Gardening Association reported that, in 2004, three out of four households in the U.S. (82 million households) participated in one or more indoor and outdoor lawn and garden activities. <sup>6</sup>Attendance at orchid exhibitions was less prevalent, with about one-third having attended an exhibition in Washington DC or outside (10%).

One-fourth of the visitors acknowledged that they “knew nothing about orchids,” (25%). Another 51 percent indicated that they “knew a little bit,” while most of the rest indicated that they were “familiar” with orchids



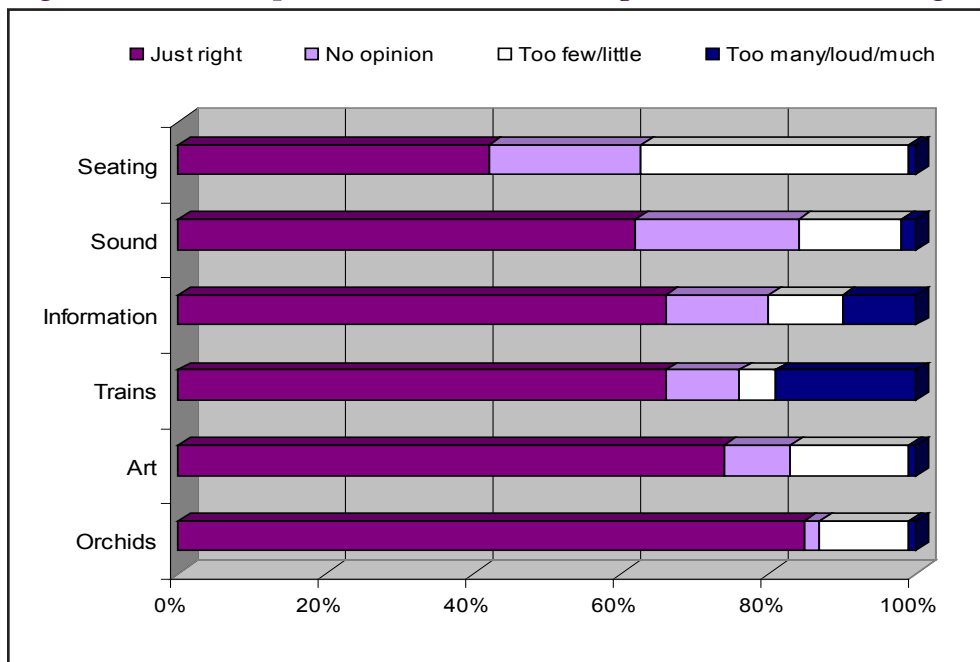
(22%). A rare visitor claimed to be an orchids' expert (1%). All of these groups rated the exhibition similarly.

About one-fourth of the visitors (26%) indicated that they were especially interested in trains. Train hobbyists are plentiful nationally. In a 2005 survey, the World's Greatest Hobby, an enthusiast-focused resource of the Model Railroad Industry Association estimated 500,000 American hobbyists participate in model railroading, 80,000 of those specifically garden railroading.<sup>7</sup>

### Exhibition criticism

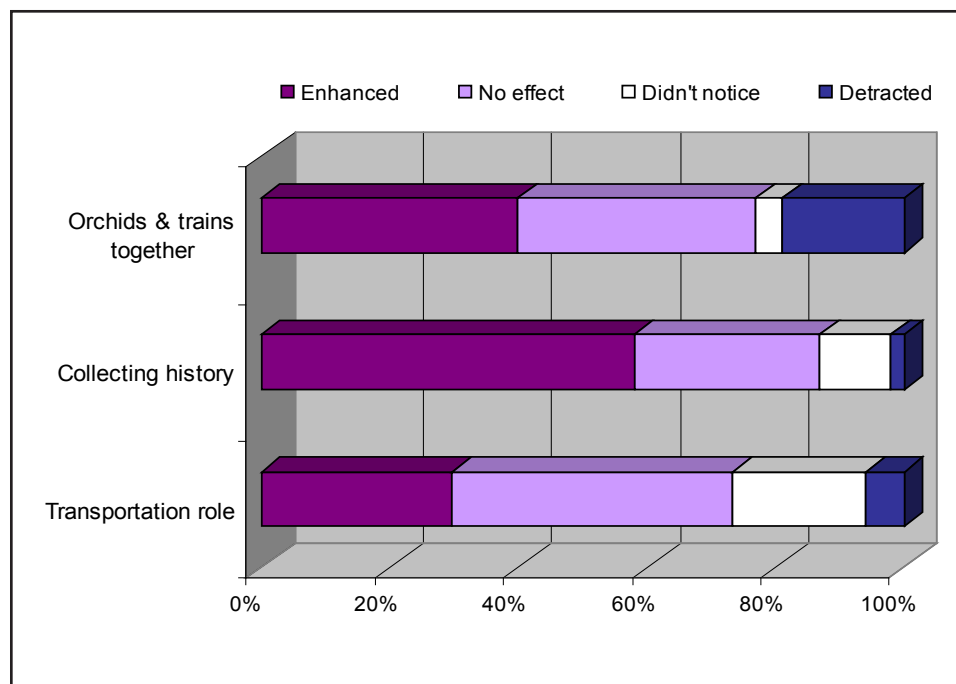
Visitors freely expressed their opinions about a series of content and design features. With the exception of seating (four benches dispersed throughout the space) where one-third (37%) of visitors felt a lack of places to sit, at least three-fourths of visitors either felt that other features were "just right" or had no opinion. Equal groups (10%) wanted fewer and more trains, while nearly a fifth (19%) objected to the train sounds. About 12 to 16 percent of visitors wanted more orchids, information or art (paintings, prints, sculptures). (Figure 4). Visitors who felt that there were too many trains gave the exhibition lower ratings, while the train sounds had no impact on ratings.

Figure 4: Visitor opinions about *Orchid Express* Content & Design



The combination of orchids and trains in the same exhibition got mixed reviews from visitors. Two-fifths (40%) indicated that it enhanced their visit while another two-fifths either felt that the combination either had no effect (37%) on their visit or had no opinion (4%), The remainder (19%) felt that it detracted from it. Those visitors who indicated that the theme detracted from their visit rated the exhibition lower. The interpretive strategies, i.e., the emphasis on the history of collecting and the emphasis on the role of transportation, however, were well received by visitors; 58 percent and 30 percent, respectively, felt their visits were enhanced with minimal disapproval (2% and 6% detracted) (Figure 5).

Figure 5: Visitor opinions about *Orchid Express* Themes



### Engagement with the exhibition

The *Orchid Express*, like its predecessor *Nature's Jewels*, gave visitors the opportunity to engage in a range of activities. This year, watching the trains and smelling an orchid up close were reported by about three-fifths of visitors. While approximately two-fifths of visitors reported looking at the art (sculptures, paintings and prints) or taking pictures. In *Nature's Jewels*, butterfly-related activities were more common than orchid-related ones. Two activities, sitting in the exhibition and talking to staff were more limited (13% and 12%, respectively). As noted above, seating was limited. While the percentage of visitors who talked

to staff appears low, it reflects the high volume of visitors in the gallery in proportion to staff. During the exhibition's duration, HSD tried to have a minimum of two or three staff members or docents available in the gallery.

Excluding sitting and staff interaction, on average visitors engaged in 2.2 activities (ranging from 0-4). Understandably, more engaged visitors rated the exhibition more favorably. Visitors who indicated that they participated in four activities had the highest percentage of visitors who rated the exhibition as "superior" (36%).

### Demographic Characteristics of the *Orchid Express* Visitors

Demographically, the *Orchid Express* visitors were typical spring visitors to NMNH, with the exception of gender. Almost two out of five visitors were making their first visit to the Smithsonian (38%) and, by extension, to NMNH. Nearly one-fifth of respondents (18%) said that they came primarily to see this exhibition and one in ten reported seeing it more than once.

Members of the later Baby Boom Generation (39-49), Generation X (28-38) and Generation Y visitors form the three largest groups of visitors (28%, 24% and 21% respectively). Earlier Baby Boomer visitors (50 to 58) and senior citizens (59 and over) combined comprised 13 percent of the total. The overwhelming majority of visitors resided in the United States (95%). Although they were widely distributed across the country, the Southeast and Mid-Atlantic accounted for three of every five visitors.

Adults made up most of the visitor population in several combinations: other adults but no children (49%); with children (35%); alone (9%); or with an organized group (5%). Nearly two-thirds of the visitors were women (64%), much higher than in the rest of the museum (50% museum-wide). In 2003, a nearly identical proportion of women was observed in the *Nature's Jewels* exhibition.

## *Visitor Comments*

At the end of the questionnaire, visitors were asked, “If you could make ONE change to the exhibition, what would it be?” While nearly two-thirds (64%) did not comment and a few (2%) expressed that the exhibition was “perfect,” the rest either reinforced opinions stated in the survey (16%) or made suggestions (19%). About half of the visitors who indicated that exhibition had too few orchids, repeated the comment or said that the exhibition should have more variety. Whereas the survey option “too many” trains was selected by ten percent of visitors, some visitors went further in the open-ended question and wrote that the exhibition should be without trains (7%). Some (20%) of those who felt that the exhibition had “too few” trains (10%), made the request in comments.

The suggestions to HSD for future exhibitions, or changes to the exhibition just visited, were far ranging. They included adding soothing music, more information about the orchids, and expert gardening tips. A complete enumeration is in Appendix B.



## Discussion

The *Orchid Express*, like its predecessor *Nature's Jewels*, delighted many thousands of visitors who either came specifically to see it at NMNH or who encountered it by chance during their visit. A few (11%) came to see it again or walked through it more than once while in the museum. Informal staff observations suggest that families with children were especially pleased with the trains, as well as with opportunities to have their children smell the orchids.

Comparisons to the 2003 *Nature's Jewels* are complicated by both context and content. *Nature's Jewels* was located in AIB near a central fountain and across from a café operating during most of the exhibition period. Café tables and chairs were available nearby. The orchid exhibition, together with the accompanying butterfly conservatory, was the main – and almost sole – attraction in the building. Visitors to *Nature's Jewels*, purposive or accidental, had little else to distract them. For many, the exhibition provided a respite from visiting larger venues. Almost half came specifically to see it.

The context for the *Orchid Express* was quite different. Even those who came especially to see it had to wind their ways through large and frequently noisy hallways filled with unrelated exhibitions. Four out of five visitors came to NMNH with another agenda rather than coming specifically to see this exhibition. The space was elongated with limited seating. The content, orchids and trains, was especially attractive to subgroups of visitors though overall, the trains may have detracted from the experience for a few visitors.

In the context of a larger museum, the juxtaposition of multiple themes may be appealing to a greater variety of visitors. Train enthusiasts welcomed this year's coupling. But limited to a smaller venue, a more narrow focus on the traditional, i.e., more detailed aspects of the orchids may be more satisfying. Housing future orchid exhibitions in either a busy, larger museum or in a more intimate space in a smaller museum raises questions of a balance between high exposure and more focused experiences for fewer visitors.

# Appendix A

## Results from the Survey of Visitors to the

### *Orchid Express*

[Note: Appendix is in topical order, generally following questionnaire order. Question numbers indicate the original order. Per question, where applicable, responses are listed in decreasing order.]

### Activities

1. Which of the following did you do in this exhibition?  
64% Watched the trains  
62% Smelled an orchid up close  
47% Looked at the art (sculptures, paintings, prints)  
43% Took photos  
13% Sat down in the exhibition  
12% Talked with museum staff

### Opinions

2. How would you rate your visit to this exhibition?  
<1% Poor  
2% Fair  
23% Good  
56% Excellent  
19% Superior
7. Which of the following experiences did you find satisfying in this exhibition? [Mark all that apply]  
72% Being moved by beauty  
59% Relaxing  
57% Spending time with friends/family  
56% Seeing “the real thing”  
40% Feeling connected with nature  
39% Gaining information or insight  
34% Feeling awe and wonder  
27% Feeling inspired  
19% Appreciating the need for scientific research  
17% Imagining or recalling other times or places  
17% Seeing my children learn  
4% Other (written comment)



7b. Which experience did you find MOST satisfying?

30%	Being moved by beauty
18%	Spending time with friends/family
14%	Seeing “the real thing”
9%	Relaxing
6%	Gaining information or insight
6%	Feeling awe and wonder
4%	Feeling connected with nature
4%	Seeing my children learn
3%	Feeling inspired
3%	Other (written comment)
2%	Imagining or recalling other times or places
2%	Appreciating the need for scientific research



8. How would you rate the following features of the exhibition?

Trains

10%	Too few
66%	Just right
10%	Too many
14%	No opinion

Sounds

5%	Too quiet
66%	Just right
19%	Too loud
10%	No opinion

Places to sit

37%	Too few
43%	Just right
<1%	Too many
21%	No opinion

Orchids

12%	Too few
84%	Just right
1%	Too many
2%	No opinion

Amount of information

16%	Too little
74%	Just right
1%	Too much
9%	No opinion

Art (paintings, prints, sculptures)

14%	Too few
62%	Just right
2%	Too many
22%	No opinion

10. In the Orchid Express exhibition, how did EACH of the following affect your visit?

Seeing orchids and trains together

19%	Detracted
37%	No effect
40%	Enhanced
4%	Did not notice

Emphasis on history of collecting

2%	Detracted
29%	No effect
58%	Enhanced
11%	Did not notice

Emphasis on role of transportation

6%	Detracted
44%	No effect
30%	Enhanced
21%	Did not notice

## Background Questions

9. Prior to this visit, rate your knowledge of orchids:
- |     |                                  |
|-----|----------------------------------|
| 1%  | I was already an orchids expert! |
| 22% | I was familiar                   |
| 51% | I knew a little bit              |
| 25% | I knew nothing about orchids     |
10. Have you ever grown orchids?
- |     |    |     |     |
|-----|----|-----|-----|
| 69% | No | 31% | Yes |
|-----|----|-----|-----|
11. Are you a gardener?
- |     |    |     |     |
|-----|----|-----|-----|
| 48% | No | 52% | Yes |
|-----|----|-----|-----|
12. Are you especially interested in trains?
- |     |    |     |     |
|-----|----|-----|-----|
| 75% | No | 26% | Yes |
|-----|----|-----|-----|
14. Have you seen an orchid exhibition elsewhere?
- |     |                                |
|-----|--------------------------------|
| 10% | Yes, in Washington, DC         |
| 33% | Yes, outside of Washington, DC |
| 62% | No                             |
4. Is this your first visit to the Smithsonian?
- |     |    |     |     |
|-----|----|-----|-----|
| 62% | No | 38% | Yes |
|-----|----|-----|-----|
5. Did you come to the Smithsonian primarily to see this exhibition?
- |     |    |     |     |
|-----|----|-----|-----|
| 82% | No | 18% | Yes |
|-----|----|-----|-----|
6. Have you visited this exhibition more than once?
- |     |    |     |     |
|-----|----|-----|-----|
| 89% | No | 11% | Yes |
|-----|----|-----|-----|
3. Did you use the Smithsonian website to plan your visit to this exhibition?
- |     |    |     |     |
|-----|----|-----|-----|
| 90% | No | 10% | Yes |
|-----|----|-----|-----|

## Demographic Characteristics

### 15. *Where do you live?*

95% USA 5% Other country

#### *USA*

15% Metro Washington  
22% Southeast  
24% Mid Atlantic  
12% Midwest  
6% New England  
5% Mountain Plains  
11% West

### 16. *With whom are you visiting today?*

9% Unaccompanied adult  
49% Group of adults  
16% Adults with youth  
19% One adult with youth  
8% Other [Groups]

### 17. *What is your age?*

13% 59 and older  
13% 50 to 58  
28% 39 to 49  
24% 28 to 38  
21% 27 and younger

### 18. *What is your gender?*

64% Female 36% Male



## Appendix B

As noted in the text, survey respondents were invited to suggest one change to the exhibition. This appendix contains the comments and suggestions by the 19 percent of visitors who covered topics beyond the survey.

### Information

The largest category of comments that extended beyond the content of the survey expressed a desire for more information. A total of 19 visitors (3% of all respondents) requested more identification, handouts or information. Several examples include:

- More info; more hands-on
- More info on endangered orchids
- More identification; more history/info
- Learn about care (practical); Info on why they are so hard to grow
- More printed material on types and growing
- Add information about insects/birds (etc) that are attracted to individual orchids
- People to answer questions about orchids and plants with them; talk to expert about problems with orchids
- Provide instructional brochures for how to grow; sell “starter kits” via mail

A critical comment echoed this theme: “Not all [the] orchids were labeled. Especially some of the more unusual, which is frustrating.” Two other respondents wrote in questions, “Why are [some] orchids so important to history and others aren’t?” and “What is the cost or value of the individual orchids?”

### “More”

Six respondents wrote in comments that detailed the need for “more,” in specific terms. Requests included:

- Put orchids of wide variety of smells together
- Have more Ecuadorian orchids. There’s more than 5,000 kinds of orchids
- More Lady Slippers (Minnesota variety). And pirate ships.
- I’d like to see a broader range of species and more unusual orchids.

## Trains

In addition to more trains or fewer trains separately discussed in the survey, several respondents wrote more specific comments on this subject:

I like the trains but don't understand the connection.  
No trains! What's the connection? Calm vs. noise?  
No trains please! Otherwise it was fantastic!  
Skip the trains

From the opposite perspective, other comments reflected an appreciation for the trains:

More trains! Really kept the kids interested while I looked at orchids  
Bigger trains, slow them down

## Activities

A few visitors noted a need for more activities. For example, one teenager commented, "It smells weird and not enough kid activities." Others agreed:

More hands on  
More children's activities on orchids

## Sound

Sound was a common issue echoed in the survey and in a few visitor comments. Some criticized the noise from the trains while others suggested alternative sounds they'd appreciate more:

Less noise  
Diminish sound of train whistle – replace with waterfall sound  
Calming music; Soothing music being played; Soft music – Classical and relaxing  
Have nature music on while touring through the exhibit  
Add bird songs instead of train noise; Sounds of nature – only sound noticed is noisy train

## Design

Respondents wrote in a variety of comments regarding the exhibition design, including some suggestions for improvement. Four visitors requested more art. Others suggested additional exhibition elements:

Cooler – too stuffy/hot  
Waterfalls (2)  
Better lighting on flowers; more light



Perhaps the ceiling could be a different color; more color on the walls. Don't like gray  
Improve traffic flow  
Perhaps a "one-way" walk through exhibit so you can view everything without doubling back  
Painted walk; Put a pebble pathway instead of carpet  
More natural setting; an arch with orchids growing overhead. A stimulating rainforest canopy  
Larger (taller) room

Several comments reflected on the opportunity for photography:

One area specifically for photos; better vantage points for photo taking  
More specific, framed orchid sections

Of course, some respondents expressed ambitious desires; 13 visitors shared grander ideas. Three visitors wrote in "Sell real orchids in the gift shop." One visitor went a step beyond that with, "Free orchids for those attending!" The remaining respondents in this category desired: a coffee kiosk, a place to leave our stroller, free pins, more places to get food, "serve drinks!" and "stay open later." One visitor wanted to touch the flowers. A child enthusiastic about the rest of NMNH, asked "Put a tiger in here." Finally, another visitor said, "Make it a permanent exhibit."



## *Image Credits*

*All images courtesy of Smithsonian Institution (SI)*

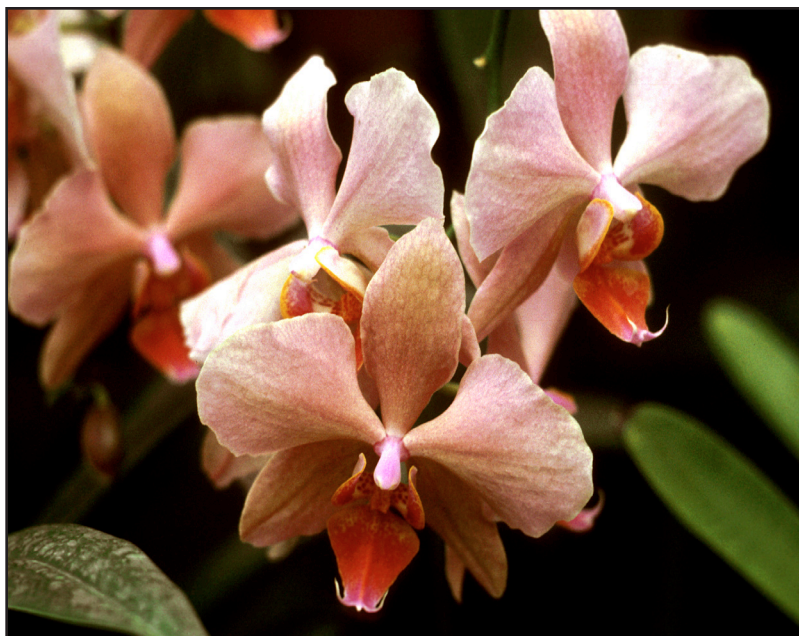
Cover: Orchid Express logo, created by SI Office of Exhibits Central

Page 2: *Cypripedium paviflorum* (Orchidaceae). Department of Botany, NMNH. Photographer: E. Haug.

Page 5: Orchid Express, Steiner flowershop. Photographer: SI Photographic Services.

Page 12: Orchid Express, Steiner greenhouse. Photographer: SI Photographic Services.





Page 15: Orchid Express, Steiner dock. Photographer: SI Photographic Services.

Page 18: Orchid Express, ICE Train, Photographer: SI Photographic Services.

Page 21: Orchid Express, Exhibit Cattleya. Photographer: SI Photographic Services

Page 22: *Sobralia macrantha* (Orchidaceae). Department of Botany, NMNH. Photographer: G.A. Cooper.

Page 23: *Phalaenopsis* sp. (Orchidaceae). Department of Botany, NMNH. Photographer: G.A. Cooper.