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Orchid species preservation foundation: Choosing a Direction

Mark Arnison wrote this case solely to provide material for class discussion. The author does not intend to illustrate either effective or ineffective handling of a managerial situation. The author may have disguised certain names and other identifying information to protect confidentiality.

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Dave Nixon, president of the Orchid Species Preservation Foundation (OSPF), a charitable not-for-profit foundation based in Edmonton, Alberta, Canada, had grand plans for the organization. It was autumn of 2014, and OSPF’s board of directors was considering the idea of building a new and vibrant educational facility that would expand the reach of its program. To do so, the OSPF would have to generate a tenfold increase in revenues to operate the new facility in the long term. The idea was to take the OSPF’s passion for the conservation of rare and endangered orchids and turn it into something with great impact for the region and the world. The volunteer board, which included Nixon as its chairperson, had developed a suite of ideas for taking the big leap forward; however, the list was broad and the OSPF could not possibly undertake all the activities it contained. The board was unsure of which strategy to choose and how to make it all happen.

The Foundation and its Building Plans

Since its inception in 1991, the OSPF had dedicated great effort towards developing a world-renowned orchid species collection. The OSPF website clearly described the mission of the organization:

Our protected (ex-situ) orchid collection serves as a vehicle to save rare and endangered species orchids from extinction due to many rapid environmental disruptions. The collection is a significant living resource and educational tool to educate people [about] important environmental issues.

The OSPF’s objectives included the broad categories of conservation, education and training, and community involvement (see Exhibit 1). The members’ main efforts focused on conservation objectives, and all of its volunteers were adept at propagating and growing orchids.

The foundation was housed at the City of Edmonton-owned Muttart Conservatory (the Muttart), where the OSPF operated a 5,000-square-foot[[1]](#footnote-1) greenhouse that was used to grow and house the foundation’s collection of 4,500 orchids. The collection, which focused on tropical orchids, had originally started with a donation of 3,000 orchids. Over time, the collection grew to contain over 1,000 different orchid species and ranked as the 10th largest collection in North America. The OSPF also displayed part of its orchid collection for the public in the main buildings at the Muttart.

Finished in 2004 at a cost of $700,000,[[2]](#footnote-2) the greenhouse was divided into several sections, based on growing temperature. Each section was controlled by state-of-the-art mechanical and computer systems to ensure the survival of the rare and endangered orchids (see Exhibit 2). Funding for the facility came mainly from grants and donations, although the OSPF generated operating revenue through fundraising activities, donations, membership fees, and the sale of orchids (see Exhibit 3).

Nixon felt that, based on past experience, the board would likely be able to generate capital funding to build the centre. He noted, “The real issue is operating dollars. Nobody wants to fund the operating costs. The centre needs to generate its own income.”

The OSPF’s plan for developing a new botanical education centre was broken into three stages, starting with propagation and sales of orchid seedlings, followed by growing and selling mature plants, and then building and operating the actual interpretive centre.

Nixon had generated some preliminary information and assumptions regarding revenues and operating costs for the first two stages of the project. He had also provided the rest of the board members with a summary of his research into capital costs for building (see Exhibits 4 and 5).

Link to the Muttart Conservatory

The Muttart Conservatory was a plant sanctuary and special-events space run by the City of Edmonton. The iconic facility, which was composed of four glass pyramids in the centre of Edmonton’s river valley green space, housed collections of plants from all over the world. One of the pyramids, the Feature Pyramid, changed displays five to seven times per year. The other three pyramids were dedicated to plant life from arid, temperate, and tropical environments. Guests were attracted to the conservatory to view the plants, but many people also came to spend contemplative time in a quiet, pleasant environment.[[3]](#footnote-3)

The Muttart also attracted guests through ongoing presentations of art exhibits, musical concerts, and educational programs. Its in-house café, Culina Muttart, was run by a well-known local restaurant, which catered many of the special events held at the conservatory such as receptions, banquets, and weddings.

The Muttart Conservatory and the OSPF were in the middle of renegotiating an operating agreement that had expired. This agreement laid out the details of the relationship between the two entities and noted the tasks for which each organization was responsible. The agreement stated that the Muttart would provide an annual contribution towards the care and maintenance of the orchid collection, and the amount of this contribution would be equal to the money generated by the sale of orchids from the collection in the previous year. This contribution was in kind, and no money changed hands. The OSPF, at its own discretion, was allowed to donate money to the Muttart, and these funds were to be used exclusively to support the orchid collection.

The partnership between the OSPF and the Muttart Conservatory had been beneficial to both partners, but the Muttart administration had decided it was time to downsize the orchid display. It had also opted to restrict the OSPF’s access to the orchid greenhouse to between 10 a.m. and 1 p.m. on Wednesdays only. (Previously, the OSPF had been given access on Thursday nights and Saturdays as well.) The administrators at the Muttart also required OSPF volunteers to be supervised by one of the foundation’s growers or, in the grower’s absence, the president of the OSPF. These changes in the agreement ran contrary to the wishes of the OSPF board and prompted the desire for the foundation to build its own orchid interpretive centre and perhaps expand the organization’s mandate.

The relationship between the two groups had been at times warm and at times frosty. Both groups felt they had ownership of the greenhouse although that sentiment sometimes caused conflict between the two groups since their goals for the greenhouse operations were somewhat different. The Muttart had a mandate to generate customer visits, and its board was opposed to spending resources in areas that did not support that goal. The OSPF, on the other hand, was largely interested in conservation issues. The OSPF members who were involved in growing the orchids had to tread lightly in the greenhouse in order to avoid accusations of taking away jobs from union members employed by the City of Edmonton. At times, the greenhouse volunteers felt untrusted by the Muttart staff. Despite the rocky history between the two groups, however, the current relationship between the Muttart’s growers and the OSPF was good.

The Orchid

The International Union for the Conservation of Nature (IUCN) described plants as having a critical role in the survival of humans and other species due to the fact that plants provide several basic necessities, such as oxygen, food, fuel, and medicinal products: “Life as we know it would not continue without plants and their conservation is essential.”[[4]](#footnote-4)

The IUCN website described orchids as the largest family of flowering plants (8 percent of flowering plants), encompassing approximately 25,000 different species. Orchids could be found all over the world, with the largest concentrations in the tropics and subtropics. The majority of tropical orchid species were epiphytic (i.e., they lived non-parasitically on another plant and derived nutrients and moisture from the surrounding environment); the orchids in Alberta were terrestrial orchids (i.e., they grew in the ground). The lifecycle of orchids was considered complex and was often closely linked to fungi and animals in the local area. Orchid seeds were typically small, about the size of dust particles.[[5]](#footnote-5)

Since orchids were sensitive to changes in the environment, they were considered a particularly important indicator of the health of a given eco-system. Nixon referred to orchids as “the canary in the [coal] mine,” which ws an analogy to the use of small birds to determine when the air in a coal mine had become unfit for mine workers to breathe (i.e., the birds suffered the effects of the poor air before humans did). In the same way, dying orchids were considered an indicator of an ecosystem that was in trouble.[[6]](#footnote-6)

Orchids were classified according to their risk of extinction in a process known as “red listing,” which provided a way for regions to prioritize conservation actions and maintain biodiversity. Canada was home to 78 native species of orchid, seven of which had been listed as “at risk” and 10 of which had been listed as “may be at risk.”[[7]](#footnote-7) The major pressures on orchids included climate change, industrial and urban land use, and pollination issues (e.g., the collapse of bee colonies).

The evolutionary history of orchids had been heavily studied, and much work had been performed towards the goal of categorizing the deoxyribonucleic acid (DNA) sequences of the plants and developing seed banks to preserve each species. The North American Orchid Conservation Centre, a partnership created to ensure the survival of orchids native to North America, developed an orchid seed bank to function alongside global seed banks and a Canadian government seed bank, but even with all these resources in place, many questions remained unanswered, and since their needs varied greatly, there was no single best way to preserve the specimens and then germinate and grow them in the future. Generally, compared to terrestrial orchids, epiphytic orchids were easier to propagate.

The Alberta Economy

In the fall of 2014, the provincial economy in Alberta was strong. It was heavily reliant on the oil and gas industry, which was doing well. In its 2014 fourth-quarter outlook report, the Alberta Treasury Branches (ATB)’s Financial Economics and Research Group had glowing things to say about the province’s economy. ATB predicted real gross domestic product (GDP) growth increases of 3.6 per cent in 2015 and 3.7 per cent in 2016. It also predicted that inflation would remain in the mid-2-per-cent range and that the unemployment rate would remain low in the mid-4-per-cent range. The province’s population was growing due to immigration, and this trend was predicted to continue. As mentioned in the ATB report, the Canadian Federation of Independent Business noted that business owners had a high degree of optimism about future sales. The major risk for the economy was the ever-present potential for a drop in oil prices.[[8]](#footnote-8)

World Trade and Commercial Use of Orchids

International trade in live orchids was big business. In 2013, the United Nations Commodity Trade Statistics Database listed total world exports of orchids at US$208 million, while Canada imported just under 1.5 per cent of this amount at US$2.9 million.[[9]](#footnote-9) The top eight importers and exporters of orchids are shown in Exhibit 6.

The orchid was sold as a live plant and used in ornamental floral arrangements; orchids were also used in the pharmaceutical, food, and fragrance industries. Growing and selling live orchids was a factory business, and the plants were grown in large greenhouses. Chinese medicine constituted the main user of orchids as pharmaceuticals, and China grew three species of orchids on a commercial basis for use in the herbal medicine industry for treatment of a wide range of health issues.[[10]](#footnote-10)

World trade in orchids was a restricted practice. The plants were subject to the dictates of the Convention on International Trade of Endangered Species of Wild Fauna and Flora (CITES),[[11]](#footnote-11) of which Canada and the United States were some of the initial members in 1975. Appendixes I and II of that agreement listed all flora and fauna that were considered threatened in some way. All orchids were covered by the agreement, and as such, importers and exporters had to meet certain licensing restrictions when selling and transporting the flowers; these restrictions applied to both commercial and personal use. Nixon described the complicated and bureaucratic import and export process as “painful.”

The Board and Volunteers

The OSPF was a lean operation, run by volunteers who were driven by their love of orchids; the organization had no paid employees. The board of directors, chaired by Nixon, was composed of eight people (see Exhibit 7). Nixon observed that four people on the board were doing the majority of the work in moving the organization forward. He also noted that in order to take the big steps necessary to make the new centre a reality, the board members would need, at the very least, some board-development assistance in order to improve their governance skills.

Another area that Nixon felt was lacking was OSPF’s connection with industry—a relationship that would be critical to fundraising and to the operation of the other potential initiatives the board was considering. Nixon indicated that the board was “tied into groups that specialize in linking non-profits to granting agencies” at the federal, provincial, municipal, and private foundation levels. He pointed out the fact that the group had raised $450,000 in two years to fund the extension at the Muttart Conservatory.

Nixon described the OSPF general volunteer base as “passionate but eroding.” The foundation had a list of approximately 250 supporters, many of whom had become involved in the organization because they could gain hands-on experience working with orchids under the guidance of knowledgeable tutors, rather than just listening to experts talk and watching slide shows of orchids. They could literally get their hands dirty growing interesting orchids, which, according to Nixon, were “the really weird ones, the kind you can’t get at Safeway.”

Because the greenhouse hours were limited, approximately only 20 volunteers regularly showed up at the Wednesday sessions to work with the plants. Another 20 volunteered to staff orchid shows (trade fairs used to display orchids and discuss related issues) and to work at fundraising casinos. Nixon indicated that the organization was searching for opportunities for supporters to become more actively involved in other efforts, such as conservation issues. He pointed to web design and marketing as areas in which the OSPF could use the assistance of volunteers with those skill sets.

The Ideas List

Nixon and the board of the OSPF brainstormed a wide range of potential revenue-generating ideas, all of which stemmed from the growth of orchids.

**Sell Mature Orchid Plants**

These plants would be sold to orchid enthusiasts and perhaps to flower retailers and garden centres. The orchids sold would be rarer than the generic orchids found for sale in many grocery stores. Nixon noted that the OSPF “didn’t really know the market.” OSPF would have an advantage here due to the large range of species in its collection.

**Propagate and Sell Seedlings**

OSPF could use its proposed new space to grow seedlings. The typical customer would be a serious amateur grower who would then be willing to tend the plants for the six to seven years it would take for them to flower.

**Develop a Seed Bank and Sell Orchid Seeds**

The market for seeds was global in scope, but it was a small one. The potential customers included propagation laboratories, of which there were about 100 in the world, and educational institutions that had a need for the seeds of rare species.

**Market the New Facility for Special Events and Other Uses**

The centre could be designed to include a restaurant and gift shop like those at the Muttart Conservatory. It could also be designed to accommodate special events, such as weddings and conferences. Alternatively, it could be set up as a biological science centre that would make a suitable home for botanical clubs.

**Grow and Market Plants for Use in Land-Reclamation Projects**

Given the wide desire—both in industry and in the general population—to reclaim land that had been harmed by industrial activity (e.g., oil sands mining), the OSPF could focus on working with industry to provide plant material for land-reclamation projects.

**Create a DNA Bank for Orchids**

This operation might supply the nursery industry, particularly in relation to the production of hybrid flowers. The range of species in the OSPF collection would allow the foundation to create many thousands of different types of hybrid flowers.

**Enter into Educational Partnerships with Local Schools**

This venture might replicate the Writhlington School Orchid Project in the United Kingdom, which used the propagation of orchids as a focal point in teaching biology, conservation, and community service. The Writhlington program was funded by the sale of 60,000 pounds[[12]](#footnote-12) of orchid seeds per year. Nixon saw the potential for OSPF to create hands-on biology courses in the greenhouses, coupled with curriculum modules that could be delivered in schools. He anticipated that this type of program would most likely be cost-neutral rather than a high revenue generator. The educational program would create excitement about orchids in a younger generation and generate potential public relations opportunities.

**Offer Flower Photography Courses**

Photography courses proved to be popular, and many photographers had an interest in taking pictures of beautiful flowers. Photography courses had the potential to be low-effort ventures once the greenhouses were in place. The main competitors for amateur photography courses in Edmonton were the Edmonton Public Schools’ Metro Continuing Education, the Northern Alberta Institute of Technology, and MacEwan University School of Continuing Education.

**Develop a Green Fundraising Initiative**

This concept would involve selling a product (e.g., a T-shirt) that would come with a promise from the OSPF to plant one endangered orchid for every unit of product sold. As an example of this kind of program, in 2011, shoe company Sole Technology launched a *Buy a Shoe, Plant a Tree* program, where the company planted a tree in the Costa Rican rainforest for every pair of shoes sold.

**Become a Research Site**

OSPF could link to a university research program and become a research lab for that university. Funding could be generated through service contracts with the university, which would be paid from research grants or other university funds.

**Produce and Sell Ingredients for Chinese Medicine**

The OSPF would grow orchids and process them to harvest and sell the ingredients required for Chinese medicine.

Competing Science and Educational Centres in Edmonton

Science education would constitute the main focus of the new OSPF centre, and no matter what method of funding the OSPF chose, the foundation would have to compete with similar organizations, facilities, and programs. In Edmonton, a number of organizations offered educational programming related to nature, outdoor education, and history, and these programs would have to be considered when selecting revenue-generation opportunities.

The City of Edmonton ran many of these competitor facilities and programs, offering a mix of education for pre-school children, school groups, and, to a lesser extent, adults. The City of Edmonton also offered its municipal facilities for birthday parties and special events, such as weddings and conference functions.

City of Edmonton Attractions[[13]](#footnote-13)

Edmonton Valley Zoo

The zoo, located in Edmonton’s river valley, housed a live collection of amphibians, birds, mammals, and reptiles. The zoo offered day camps for school-aged children and short nature-based activities for preschoolers. Also, a wide selection of programs designed for schools was available in the range of $150 to $250 per class. At the time (i.e., 2014), the zoo did not offer adult programming.

Fort Edmonton Park

Also located in Edmonton’s river valley, Fort Edmonton was a historical park that showcased artifacts that told the story of Edmonton’s history. The park was education-focused and attracted visitors to its school programs ($200 to $350 per group) and its day camps for children; the park also offered family programs on holidays such as Valentine’s Day and Easter.

Muttart Conservatory

The Muttart, described previously, offered courses for preschoolers and adults, focusing on gardening, meditation, and crafts in the range of $85 to $100 per person. The Muttart offered botany-focused courses for school groups (up to the age of 12) for approximately $150 per group.

John Janzen Nature Centre

This facility was positioned physically next to Fort Edmonton Park and focused on the promotion of nature in an urban setting. The centre offered courses for children, including nature discovery and geocaching, at similar prices to those of the Valley Zoo. Elementary school groups could book nature-based activities for approximately $135 per group.

River Valley Outdoor Pursuits

Edmonton’s Parks and Recreation Department offered outdoor fitness courses, such as cross-country skiing, snowshoeing, and biathlon for $35 per person per course.

Telus World of Science (TWS)[[14]](#footnote-14)

This facility was operated by the Edmonton Space and Science Foundation, and it offered educational programs with the aim of creating a positive culture with respect to science and technology. The facility included interactive science galleries, an IMAX theatre, a star theatre, an astronomy observatory, and galleries that hosted travelling exhibits, such as Star Wars Identities, Body Worlds (showing real human specimens dissected), and Harry Potter: The Exhibition.

TWS did not focus on biology but did include an environmental gallery that explored ice, rock, ecology, and storms. This facility was available for events and parties; course offerings were limited. Children had access to science camps, and adults could take astronomy courses, all ranging in price from $75 to $300 per person. TWS offered school programs that included IMAX films and science demonstrations; these programs were priced starting at approximately $10 per student and the price went up depending on the requirements.

The Devonian Botanic Garden[[15]](#footnote-15)

This garden was operated by the University of Alberta. The university’s website described the garden as follows:

The University of Alberta Botanic Garden (formerly the Devonian Botanic Garden) is a stunning 240-acre property located 15 minutes southwest of Edmonton, with cultivated gardens and plant collections, indoor showhouses, and an extensive nature trail system.

Highlights of the Garden, which was established in 1959, include the beautiful Kurimoto Japanese Garden; a Tropical Showhouse with exotic butterflies; Temperate and Arid Showhouses; alpine, herb, rose, peony, lilac, and lily collections; a Heritage Garden; Native Peoples Garden; trial beds, and more.

The educational offerings at the Devonian Botanic Garden focused more on adults than on children and were grouped into five main areas: design and landscaping, gardening, health and wellness (i.e., “Yoga at the Garden”), crafts, and photography and painting. The gardening courses included Orchids 101 and Repotting Orchids. The shorter adult-education courses were priced in the $35 to $125 range per person. The most comprehensive offering was a part-time, non-credit, master gardener certificate program, with a tuition fee of $1,055 per person.

To address the children’s market, the garden also offered five-day summer camps ($170 per child) and two-hour “Kids in the Garden” programs for pre-schoolers ($20 for child and parent).

The Devonian Botanic Garden also operated as a botanical research facility, with an emphasis on prairie and northern plant diversity (biodiversity and ecology and conservation of rare species), wetlands and ecosystem restoration, and a living fungi collection. The garden was also a member of the North American Orchid Conservation Center.

the decision

Nixon and the board members realized they had some difficult decisions to make. The new centre was a big idea, but it invited many questions. Was the project feasible, and was the OSPF equipped to handle it? Which funding ideas held enough promise to develop further? The board’s ideas ranged from commercial to scientific to educational, and the members pondered which direction to head, wondering whether there were better approaches to consider. What would the board have to do to bring focus to the project and make it a reality?

Exhibit 1: Orchid Species Preservation Foundation’s Vision

Orchid Species Preservation Foundation

Vision Statement

**"To establish and maintain Edmonton as a world renowned centre of excellence for the education, research, propagation, conservation and protection of rare and endangered orchids"**

With the following sets of objectives:

Conservation

* Conserve and protect [rare] and endangered species orchids from extinction.
* Develop a species orchid seed bank to ensure availability for future generations.
* Support and fund orchid conservation organizations, institutions, research and projects.
* Encourage ethical and environmentally-friendly cultivation of orchid species.
* Legally acquire rare and endangered orchid species to advance our collection.

Education/Training

* Educate the public about environmental issues and raise awareness about the adaptations and conditions necessary for the survival of species orchids in their natural environments.
* Provide an educational resource for youth groups and school classes by encouraging hands-on experiences with our unique orchid collection.
* Develop, train and support our members and volunteers.

Community Involvement

* Further our partnership with the Muttart Conservatory and the City of Edmonton.
* Develop community partnerships with like-minded organizations and institutions.
* Produce a variety of media to inform, promote and educate our volunteers, members, supporters, donors and the general public of our activities and accomplishments.
* Pursue fund development projects, events and donations to pursue and develop our objectives.

Source: The Orchid Species Preservation Foundation board.

Exhibit 2: the Muttart Conservatory

Muttart Conservatory



Inside the Orchid Greenhouse



Source: The Orchid Species Preservation Foundation board.

Exhibit 3: OSPF Statement of Revenue and Expenses Year Ended December 31, 2014 (in Canadian dollars)

|  |  |  |  |
| --- | --- | --- | --- |
|  | 2014 ($) |  | 2013 ($) |
| Revenues |  |  |  |
| Donations–Cash | 2,360 |  | 100 |
| In Kind | 1,005 |  | 15,335 |
| Sale of Plants | 4,701 |  | 3,424 |
| Membership | 440 |  | 460 |
| Expense Recovery | 0 |  | 283 |
| Miscellaneous Sales | 350 |  | 0 |
| Casino–See Schedule A | 20,925 |  | 25,945 |
|  | 29,781 |  | 45,547 |
|  |  |  |  |
| Expenditures |  |  |  |
| Administration | 1,922 |  | 1,332 |
| Greenhouse Expenses | 2,241 |  | 12,835 |
| Orchid Acquisitions | 4,188 |  | 23,155 |
| Orchid Shows | 10,529 |  | 1,825 |
| Advertising & Promotions | 2,113 |  | 0 |
| Website | 2,929 |  | 2,929 |
| Travel | 791 |  | 0 |
|  | 24,713 |  | 42,076 |
|  |  |  |  |
| Excess (Deficiency) of Revenues over Expenditures | 5,068 |  | 3,441 |
|  |  |  |  |
| Current Assets |  |  |  |
|  |  |  |  |
| Cash in Bank | 165,865 |  | 100,634 |
| Recoverable Expenses | 0 |  | 101 |
|  | 165,865 |  | 100,735 |
|  |  |  |  |
| Liabilities |  |  |  |
|  |  |  |  |
| Credit Card Balance | 215 |  | 0 |
| Deferred Revenue (Note 1) | 123,586 |  | 63,739 |
|  | 123,801 |  | 63,739 |
|  |  |  |  |
| Net Assets |  |  |  |
|  |  |  |  |
| Unrestricted Net Assets, Beginning of the Year | 36,996 |  | 33,555 |
| Excess (Deficiency) of Revenues Over Expenditure | 5,068 |  | 3,441 |
| Unrestricted Net Assets, End of Year | 42,064 |  | 36,996 |
|  | 165,865 |  | 100,735 |

OSPF Schedule of Casino Income for the Year Ended December 31, 2014

Schedule A

|  |  |  |  |
| --- | --- | --- | --- |
| Revenues | 2014 |  | 2013 |
|  |  |  |  |
| Casino Income Current Year | 80,772 |  | 25,943 |
| Less Deferred Portion | 59,847 |  | 0 |
| Excess of Revenue over Expenditure | 20,925 |  | 25,943 |

Note 1: Deferred Revenue

\*Deferred revenue consists of casino funds not yet disbursed

|  |  |  |  |
| --- | --- | --- | --- |
|  | 2014 |  | 2013 |
| Chequing Account | 123,586 |  | 63,739 |

Source: The Orchid Species Preservation Foundation board.

EXHIBIT 4: REVENUE AND EXPENSE PROJECTIONS FOR PHASES 1 AND 2 OF THE PROJECT

(in Canadian dollars)

**Casino Revenues:** In Alberta, charitable organizations were allowed to raise money through involvement with casinos. Each interested charity applied to the provincial government for the opportunity to participate. There was no guarantee that the charity would be granted participation rights, but the OSPF had been granted casino participation at approximately 18-month intervals. The casino facilities were operated by corporations (which owned the equipment and provided the key staff, such as dealers and managers), and the charitable organizations provided volunteers as chip runners and cash counters. In return for the volunteer involvement, the charity kept a percentage of the profit. The OSPF had been receiving approximately $50,000 from each round of participation at the casinos. The foundation was planning to continue this activity on a yearly basis and, as such, had budgeted $33,333 per year as available cash.

**Memberships and Member Donations:** The OSPF had budgeted revenue from membership fees of $20 per member for 25 members per year from 2014 onward. The foundation expected to receive $2,000 per year in donations from members as well.

**Grants and Sponsorships:** OSPF had budgeted to receive $75,000 in grants and $75,000 in corporate sponsorships in 2018, as well as $25,000 in grants and $25,000 in corporate in sponsorships in 2020, 2022, and 2024 as the foundation began expanding its facilities and operations.

**Seedling Propagation:** Although space outside of the Muttart Conservatory had not been identified, Nixon expected that the OSPF could initially set up a seedling propagation operation within a 2,000-square-foot warehouse space. The seeds would first be germinated in agar gel and then transferred to small flasks (50 seedlings per flask). These flasks would then be sold to hobbyists and orchid growers. Nixon was unaware of any operation in Canada that provided this service. He budgeted a leasing cost of $17.50 per square foot including utilities. The facility was being planned to come online in 2016 with the first seedling sales expected in 2018. The facility would require a HEPA filter air chamber in order to start up, at a cost of $20,000. Operating costs for flasks, growing media, syringes, and sterilizing agents were expected to be $4,000 per year collectively. The revenue budget for seedling propagation is shown in Table 1.

Table 1: Seedling Revenue Projections by Year

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Assumption |  | 2018 | 2019 | 2020 | 2021 | 2022 |
| Demand (Number of Flasks) | | | | | | |
| Low |  | 500 | 700 | 1,000 | 1,400 | 1,800 |
| Expected |  | 1,000 | 1,400 | 1,800 | 2,200 | 2,400 |
| High |  | 1,800 | 2,200 | 2,400 | 2,600 | 2,800 |
| Revenue Based on Expected Demand and Price Per Flask | | | | | | |
| Low | $15 | $7,500 | $10,500 | $15,000 | $21,000 | $27,000 |
| Expected | $25 | $25,000 | $35,000 | $45,000 | $55,000 | $60,000 |
| High | $60 | $108,000 | $132,000 | $144,000 | $156,000 | $168,000 |

**Plant Sales:** The OSPF historically sold 250 plants per year at $20 per plant. This piece of data was the baseline that the OSPF was using for revenue projections in this area, although the hope was that this number would rise as growing space was added. There was some risk involved in growing and selling plants since it took two to three years to grow an orchid to commercially viable size, and it was difficult to predict the popularity of specific plant species several years down the road. Grocery stores were selling generic orchids in the range of $25 per plant, and Nixon felt that the rare species of orchids from the OSPF might be able to sell at twice that price.

**EXHIBIT 4 (CONTINUED)**

**New Growing Space:** In order to sell mature plants, the OSPF would have to have space to house the plants as they grew. The new plant growing area was planned for a total of 3,000 square feet of space to be developed in 1,000-square-foot increments in 2020, 2022 and 2024. The infrastructure budget for the first increment was $300,000 ($300 per square foot, including utilities), with the following two increments budgeted at $150,000 ($150 per square foot,including utilities). The operating costs for pots, pesticides, chemicals, and expanding the foundations media efforts were estimated at $5,000 per year, starting in 2020. The OSPF was hopeful that it would not incur land acquisition costs if the new facility could be operated in cooperation with a currently operating greenhouse or a higher education facility.

Source: The Orchid Species Preservation Foundation board.

Exhibit 5: Capital Project Costs (in Canadian dollars)

While no firm plans had been created, the initial thinking for the development of the new building was as follows:

* Stage 1—Develop 2,000 square feet, starting in 2016; this area would encompass the seedling propagation space (which would be leased space until the new space was built).
* Stage 2—Develop 6,000 square feet starting in 2020, which would include the growing area.
* Stage 3—Develop 8,000 square feet in 2030 for the interpretive centre.

The board had identified infrastructure costs for other capital projects as a way to estimate the potential cost of the new centre. These costs are shown in Table 2.

The OSPF board was concerned that the entire orchid collection, if housed in one location, could be wiped out by a major catastrophe, such as a fire or flood. As such, the board intended to continue to grow plants in the greenhouse space at the Muttart Conservatory in addition to the new facilities.

Table 2: Example Infrastructure Costs for Capital Projects

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Project** | **Total Cost** | **Area (ft2)** | **Cost/ft2** | **Year of Approval** |
| **Oak Hammock Marsh Interpretive Centre** | $11,000,000 | 33,000 | $333 | 1992 |
| **Africville Interpretive Centre** | $4,500,000 | 14,000 | $321 | 2008 |
| **PCL Headquarters Building** | $24,000,000 | 83,000 | $289 | 2012 |
| **Emergency Operations Centre** | $38,000,000 | 50,000 | $760 | 2012 |
| **Markin MacPhail Performance Training Centre** | $31,000,000 | 120,000 | $258 | 2013 |
| **Philip J. Currie Dinosaur Museum** | $25,500,000 | 33,000 | $773 | 2013 |
| **Jeanne and Peter Lougheed Performing Arts Centre** | $17,500,000 | 44,200 | $396 | 2014 |
| **The Mosaic Centre for Conscious Community and Commerce** | $11,600,000 | 30,000 | $387 | 2014 |
| **Abbotsfield Recreation Centre** | $6,800,000 | 10,100 | $673 | 2014 |
| **PCL Building 1** | $19,900,000 | 44,000 | $452 | 2014 |
| **Fort Saskatchewan’s Interpretive Centre** | $6,200,000 | 14,000 | $443 | 2014 |

Source: The Orchid Species Preservation Foundation board.

Exhibit 6: Top Eight Exporters and Importers of Orchids in 2013

|  |  |  |  |
| --- | --- | --- | --- |
| **Top Eight Exporting Countries** | **Value**  **(in U.S. dollars)** | **Top Eight Importing Countries** | **Value**  **(in U.S. dollars)** |
| Netherlands | 93,412,473 | Japan | 64,395,278 |
| Thailand | 66,415,633 | Italy | 23,330,873 |
| Singapore | 16,808,403 | United States | 20,731,385 |
| New Zealand | 14,107,355 | France | 15,959,344 |
| Vietnam | 3,932,003 | Russia | 13,843,253 |
| Malaysia | 3,755,193 | China | 12,390,802 |
| Czech Republic | 1,986,674 | Germany | 12,161,966 |
| Belgium | 1,269,532 | United Kingdom | 9,714,068 |

Source: UN comtrade, “060313 [Cut Orchids and Buds, For Bouquets or Ornamental Purposes, Fresh] Imports,” United Nations Commodity Trade Statistics Database, accessed March 22, 2017, https://comtrade.un.org/db/dqBasicQueryResults.aspx?cc=060313&px=HS&y=2013&rg=1&so=9999; UN comtrade, “060313 [Cut Orchids and Buds, For Bouquets or Ornamental Purposes, Fresh] Exports,” United Nations Commodity Trade Statistics Database, accessed March 22, 2017, https://comtrade.un.org/db/dqQuickQuery.aspx?cc=060313&px=HS&y=2013&rg=2&so=9999.

Exhibit 7: OSPF Foundation Board Members, Fall 2014

The OSPF board was composed of the following executive positions, all of which were held by volunteers. In 2014, the average age of the board members was 58, with the oldest member being 73 and the youngest being 22. Typically, however, the age range of board members was from early 50s to mid-70s.

* **President:** David Nixon was a professional engineer and project manager with more than 30 years of senior management experience with an oil sands company.
* **Past-President and Communications:** Doug Bovee had a formal education in graphic design and had won many trophies for orchid display over 30 years of growing orchids.
* **Alberta Orchid Society/Canadian Orchid Congress Representative:** Monica DeWit was a dental hygienist and had been growing orchids for over 20 years. She was also one of three certified orchid judges in Alberta.
* **Treasurer:** Donna Coble was an accountant with more than 20 years of banking experience.
* **Director of Collections:** Don Hawker was a dentist with over 20 years of orchid-growing experience and anextensive knowledge of Cattleya orchid species and hybrids.
* **Database Director:** Judy Jones was Microsoft certified and had been growing orchids for over 15 years.
* **Director of Collection Management:** Barry Storeshaw had a Bachelor of Science degree in biochemistry and an extensive knowledge of genetics and laboratory methodology and equipment.
* **Secretary:** Lisa Maltby

Source: The Orchid Species Preservation Foundation board.

1. 1 square-foot = 0.093 square metres. [↑](#footnote-ref-1)
2. All currency amounts are in CA$ unless otherwise stated. [↑](#footnote-ref-2)
3. “Attractions & Events: Muttart Conservatory,” Edmonton, accessed December 9, 2014, www.edmonton.ca/attractions\_events/muttart-conservatory.aspx. [↑](#footnote-ref-3)
4. “Our Work: Plants,” IUCN, accessed December 10, 2014, www.iucn.org/theme/species/our-work/plants. [↑](#footnote-ref-4)
5. Ibid. [↑](#footnote-ref-5)
6. Ibid. [↑](#footnote-ref-6)
7. “Native Orchids,” Orchid Society of the Royal Botanical Gardens, accessed March 22, 2016, https://osrbg.ca/wp/?page\_id=73. [↑](#footnote-ref-7)
8. ATB Financial Economics and Research Group, “Alberta Economic Outlook Q4 2014,” October 2, 2014, accessed December 11, 2014, www.atb.com/SiteCollectionDocuments/About/Alberta-Economic-Outlook-Q4-2014.pdf. [↑](#footnote-ref-8)
9. UN comtrade, “060313 [Cut Orchids and Buds, For Bouquets or Ornamental Purposes, Fresh] Imports,” United Nations Commodity Trade Statistics Database, accessed March 22, 2017, https://comtrade.un.org/db/dqBasicQueryResults.aspx?cc=060313&.px=HS&y=2013&rg=1&so=9999; UN comtrade, “Data Query: 060313 [Cut Orchids and Buds, For Bouquets or Ornamental Purposes, Fresh] Exports,” United Nations Commodity Trade Statistics Database, accessed March 22, 2017, https://comtrade.un.org/db/dqQuickQuery.aspx?cc=060313&px=HS&y=2013&rg=2&so=9999. [↑](#footnote-ref-9)
10. Christopher J. Bulpitt, Yan [Li](http://jrs.sagepub.com/search?author1=Yan+Li&sortspec=date&submit=Submit), Pauline F. [Bulpitt](http://jrs.sagepub.com/search?author1=Pauline+F+Bulpitt&sortspec=date&submit=Submit), and Jiguang [Wang](http://jrs.sagepub.com/search?author1=Jiguang+Wang&sortspec=date&submit=Submit), “The Use of Orchids in Chinese Medicine,” *Journal of the Royal Society of Medicine* 100, no. 12 (December 2007): 558–563, doi: 10.1258/jrsm.100.12.558. [↑](#footnote-ref-10)
11. “Convention on International Trade in Endangered Species of Wild Fauna and Flora,” CITES: Convention on International Trade in Endangered Species of Wild Fauna and Flora, accessed March 10, 2017, https://cites.org/eng/disc/text.php. [↑](#footnote-ref-11)
12. 1 pound = 0.454 kilograms. [↑](#footnote-ref-12)
13. “Attractions & Events,” Edmonton, accessed December 16, 2014, [www.edmonton.ca/attractions-events.aspx](http://www.edmonton.ca/attractions-events.aspx). [↑](#footnote-ref-13)
14. “Exhibits & Events,” Telus World of Science Edmonton, accessed December 16, 2014, www.twose.ca/exhibits-events/permanent-exhibits. [↑](#footnote-ref-14)
15. “About the University of Alberta Botanic Garden,” University of Alberta Botanic Garden, accessed December 16, 2014, http://botanicgarden.ualberta.ca/About. [↑](#footnote-ref-15)