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Direct Marketing Hawaii's Freshwater Ornamental Aquaculture Products

CENTER FOR TROPICAL AND SUBTROPICAL AQUACULTURE

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Executive Summary

Environmental conditions favor Hawaii's ornamental aquaculture industry, which has been growing at an average annual rate of 13% since 1993 to its current product value of U.S. $750,000. While Hawaii's geographic positioning permits shorter travel time for products shipped to the West Coast in comparison to Asia, local ornamentalists must compete with the prices of their Asian competitors. In order to remain profitable, Hawaii ornamentalists must find ways to reduce their production costs or increase their revenues by selling directly to retailers.

Surveys were distributed to over 100 Hawaii freshwater aquaculture ornamentalists to construct a profile of the industry and investigate issues affecting the growth of the industry. Most of the freshwater ornamental enterprises reported that they had fewer than four employees and have been in business for over six years. The freshwater ornamental fish producers reported combined sales of over $120,000 or approximately half of the estimated freshwater ornamental aquaculture industry.

Based on the 16 producers responding to the survey, guppies, swordtails, and platys were the most commonly stocked species. *Koi*, swordtails, and gouramis contributed to over half of the product value (25.7%, 20.0%, and 7.3%, respectively), whereas swordtails, gouramis, and platys contributed to nearly half the volume of sales (23.5%, 16.1%, and 8.7%, respectively). According to the 2003 geographic distribution of the freshwater ornamental aquaculturists' sales reported, approximately 29% of products sold remained in Hawaii, while 71% were bound for the mainland. A total of 65% of fish sales were conducted through wholesalers shipping products to the mainland, whereas 4% were sold directly to mainland retailers.

According to those surveyed, the most salient issues among freshwater ornamental producers are low prices, distribution, and resource costs (feed, water, and energy). Retailers, who have access to a number of local, national, and international supply channels, control freshwater ornamental fish prices. Wholesalers compete for market share, exerting downward pressure on farm gate prices. In order to obtain higher profit margins, Hawaii ornamentalists could sell products at retail prices directly to the mainland. Based on the proportion of sales transacted through wholesalers, producers could conceivably sell as much as 65% of their product value directly to retailers if they were willing to take on the risk and responsibilities traditionally assumed by wholesalers. According to those responding to the survey, 11 out of 14 ornamentalists indicated that they would consider taking on greater risk by selling their products to mainland retailers. However, based on current production size and scope of Hawaii freshwater ornamental farmers, they may not be able to single-handedly provide the consistency and variety demanded by retailers.

Distribution is affected by a number of factors, particularly agricultural inspection and shipping. Ornamentalists feel that government support of the industry could help to streamline the agricultural inspection process. For example, they might permit producers who comply with a certification program that permits them to ship ornamental fish to the neighbor islands without having to obtain per-shipment inspection approvals. Shipping cost is a general problem for Hawaii businesses. Discounted airline cargo rates are available for shipping live fish. In addition, orna-

mental aquaculturists who are members of plant and cut flower associations may be able to obtain discounted shipping rates through carriers such as FedEx. However, it is difficult for many of Hawaii's ornamental aquaculturists to sell the volume needed to benefit from the discounted rates offered (equivalent to approximately 100 lbs). A cooperative effort, either casually or formally, may be needed to combine shipments in order to benefit from the discounted shipping rates.

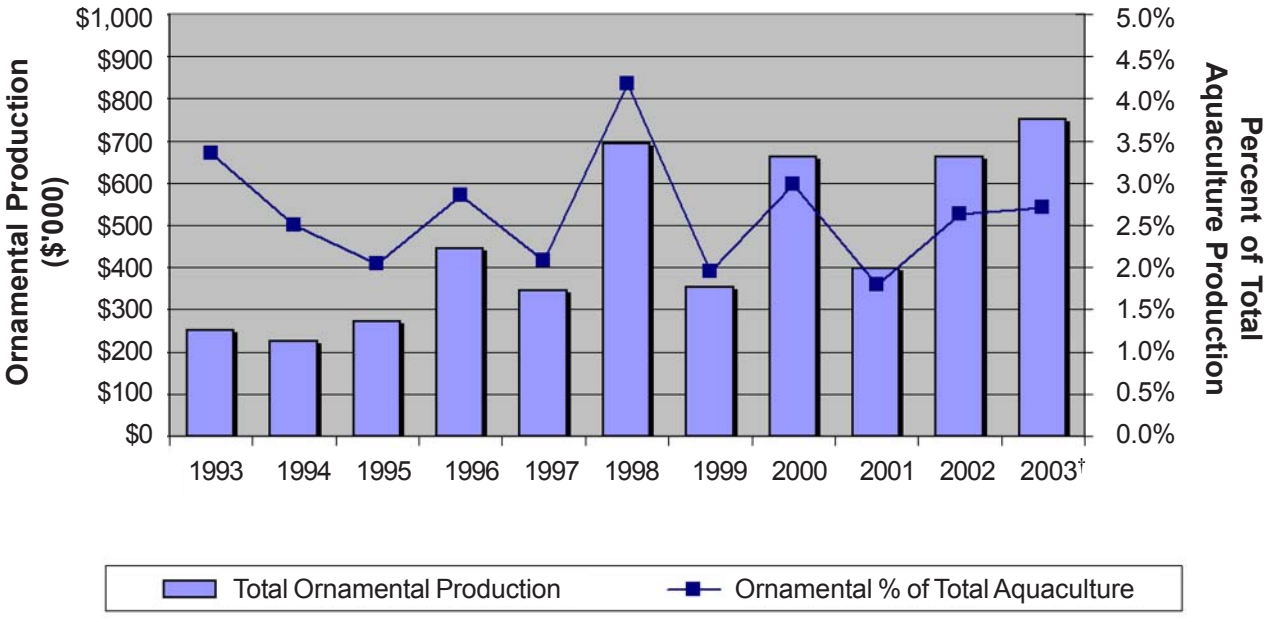
Finally, ornamentalists could increase profit margins by reducing their resource costs. Forming alliances, such as agricultural cooperatives, can help to reduce farmers' production costs by leveraging volume discounts and spreading out marketing costs. Feed and packaging, for example, could be purchased by a cooperative in bulk quantities at a discount and sold to members of the cooperative. The effectiveness of such organizational structures among Hawaii freshwater aquaculture ornamentalists, however, depends on the quality of its members and rules governing the organization.

Introduction

Ornamental aquaculturists are continually seeking ways to improve their profitability in order to offset Hawaii's high cost of living and associated production costs. Hawaii ornamentalists have the advantage of a climate that supports year-round ornamental supply. In comparison to Hawaii, regions with significant climate changes like south Florida suffer from serious losses due to severe cold during the winter months (Kvalvagnaes, 1984). Farmers can increase production levels and diversify their products in order to gain economies of size and scope. However, they must find a place for their products in the marketplace.

Hawaii's geographic positioning provides strategic access to the West Coast and Asia ornamental markets, but it is in direct competition with Asia's ornamental producers. The West Coast ornamental market has been only moderately tapped by Hawaii. The U.S. is the largest import market at U.S. $57 million (25% of the world market), importing 90% of its ornamentals from Asia (Olivier, 2001a). In 1992, the West Coast served as the entry point for over half of all U.S. ornamental fish import activity; the Los Angeles port, used by most Asian competitors to transship to the U.S., facilitated 39% of all U.S. imports (Chapman et al., 1994). Based on these import rates, ornamental industry members feel that direct marketing to West Coast retailers and aquarists is a potential avenue for capturing a portion of the market that is currently serviced by Southeast Asia exporters and Florida, which dominates the market east of the Mississippi (Natarajan, 2002). Direct marketing refers to selling through farmers' markets and roadside markets, as well as selling directly to local retail stores, restaurants, institutions, and consumers (Gibson,

Figure 1. Hawaii ornamental aquaculture production value: 1993–2003.†



† Production estimates for 2003.

1994). While direct marketing strategies increase a farmer's potential customer base and profitability, such modifications to business practices may not suit all enterprises.

The research reported here provides two components for the Center for Tropical and Subtropical Aquaculture economic feasibility study on Hawaii freshwater ornamental fish growers marketing to West Coast retailers. The objective of the feasibility study is to investigate to what extent it is economically viable for producers to directly market their products to the West Coast. This document provides an industry analysis in support of the feasibility study by (1) compiling an updated profile of Hawaii commercial ornamental freshwater growers and (2) characterizing direct marketing channels in comparison to traditional distribution channels.

With a brief profile of the freshwater ornamental producers surveyed and interviewed, we report on the perspectives of Hawaii's freshwater ornamentalists and conclude with a direct marketing outlook for the freshwater ornamental aquaculture industry. In order to gain insight into issues relevant to direct marketing, we contacted over 100 local subscribers of an aquaculture product mailing list to participate in an industry survey. Nearly 40 survey responses were received. Sixteen responses were submitted by individuals actively engaged in freshwater ornamental production. The survey responses were consolidated to generate a profile of the industry and report on the perspectives of the farmers, retailers, and wholesalers on a variety of issues affecting the industry. In addition, 15 industry members were contacted by phone and in person to obtain a more in-depth view of the industry based on the perspectives of Hawaii's freshwater ornamental producers, wholesalers, and retailers.

Hawaii Ornamental Fish Industry Profile: Size and Scope

From 1993 to 2003, Hawaii's ornamental aquaculture industry (marine and freshwater) has been growing at an average annual rate of over 13% (Figure 1). According to the Hawaii Agricultural Statistics Service (HASS), the sector produced an estimated $750,000 in ornamentals in 2003, or approximately three percent of Hawaii's aquaculture products (Hidano, Regina, personal communication, October 12, 2004). Freshwater ornamentals account for 90% of the worldwide ornamental market (Bassleer, 1994). The proportion of freshwater ornamental sales may be less in recent years due to increased production of marine ornamentals, which command a higher price. Existing records do not permit the separate accounting of Hawaii's marine and freshwater production data. Locally, freshwater ornamentals products are estimated at less than half the value of all ornamental products, or $200,000–$400,000.

Figure 2. Species stocked by Hawaii ornamental growers participating in the survey.

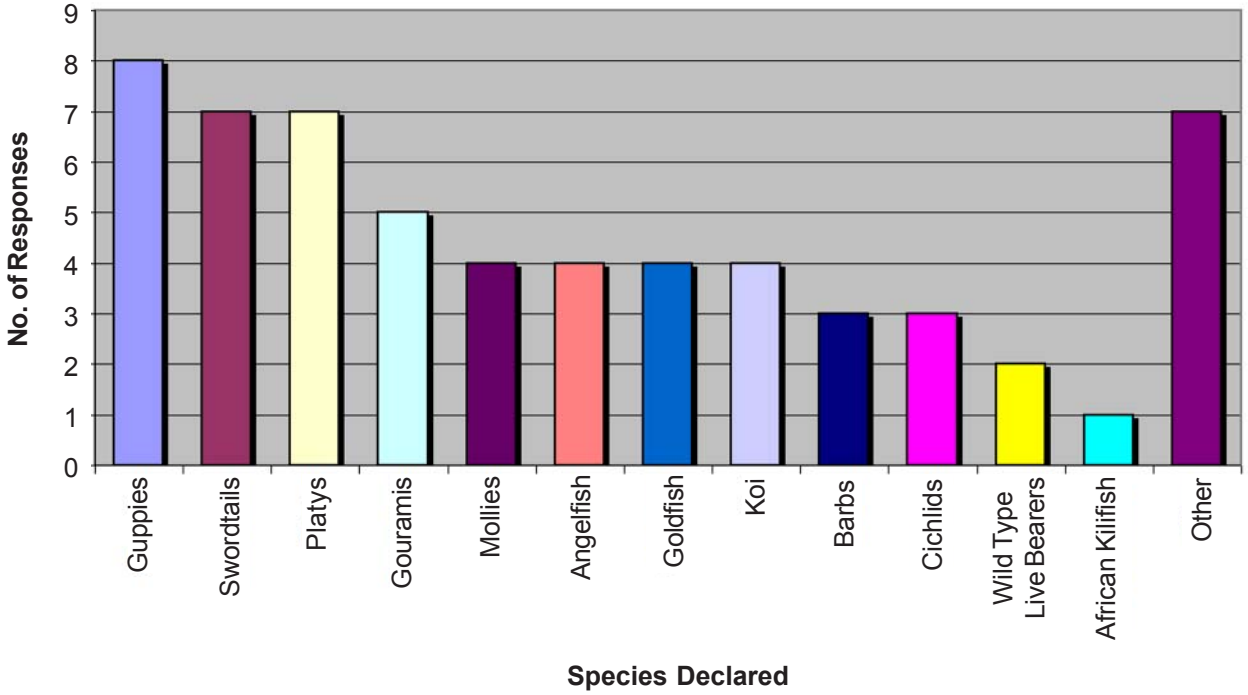
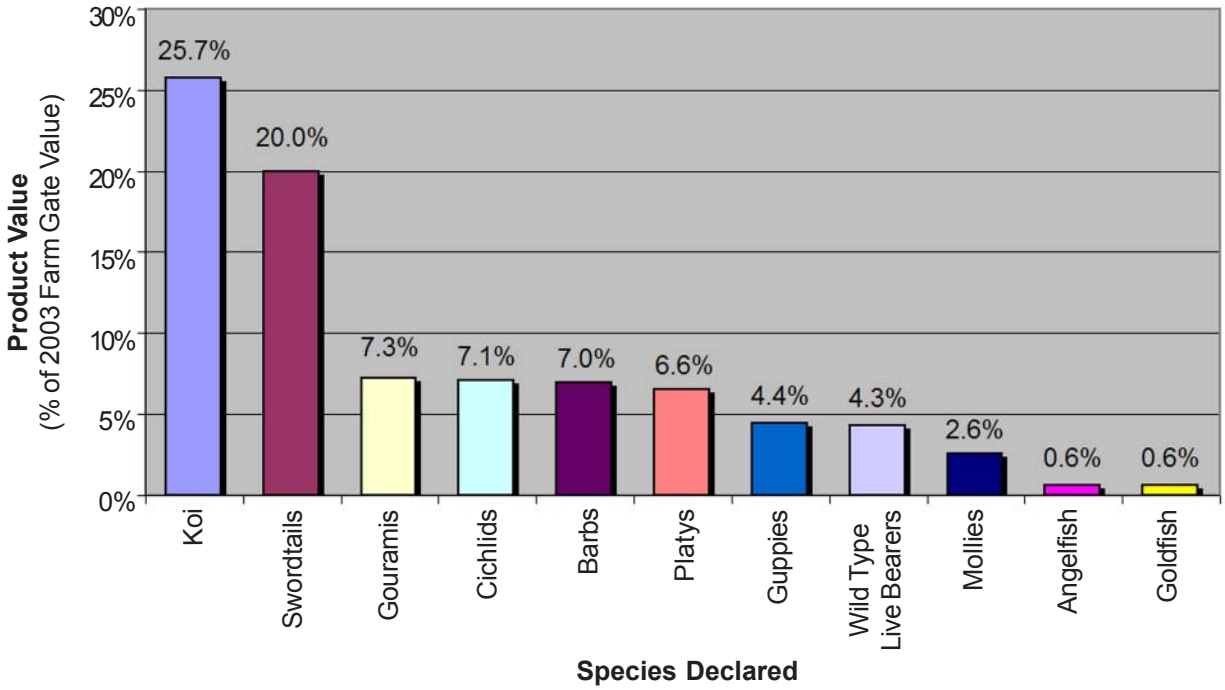


Figure 3. Ornamental production value reported for 2003.



Freshwater Ornamental Products

Ornamental aquaculture is both a hobby and a business in Hawaii. Hawaii is estimated to have as many as 70 operations producing aquarium fish (Natarajan, 2002), yet recent U.S. Department of Agriculture reports account for 15 farm-level producers (USDA, 2002).[1] The unaccounted ornamentalists are likely operating part-time, out of their homes (termed "backyard" or "garage" producers), or are not operating near full capacity.

Twelve ornamental producers in our survey reported a combined sales production of approximately $120,000 for 2003, representing approximately half of the freshwater industry. They specified over $75,000 in sales by specie for a total volume of about 400,000 fish. Guppies, swordtails, and platys were the most commonly stocked species among the ornamental producers responding to the survey (Figure 2). "Other" species included catfish, rainbows, feeders, bettas, and other species not declared. *Koi*, swordtails, and gouramis contributed to over half of the product value (25.7%, 20.0%, and 7.3%, respectively) (Figure 3). Swordtails, gouramis, and platys contributed to nearly half the volume of sales (23.5%, 16.1%, and 8.7%, respectively) (Figure 4).

Ornamentalists decide which species to grow based on market demand. Ornamental farmers are often specialized, mastering the techniques of culturing a few species. They consider wholesalers' needs, seasonality, supply (i.e., availability through imports, farmers, and hobbyists), and fish value when determining their product mix. Based on those surveyed, cichlids, angelfish, and *koi* were among the high-value species stocked by local freshwater producers in 2003.

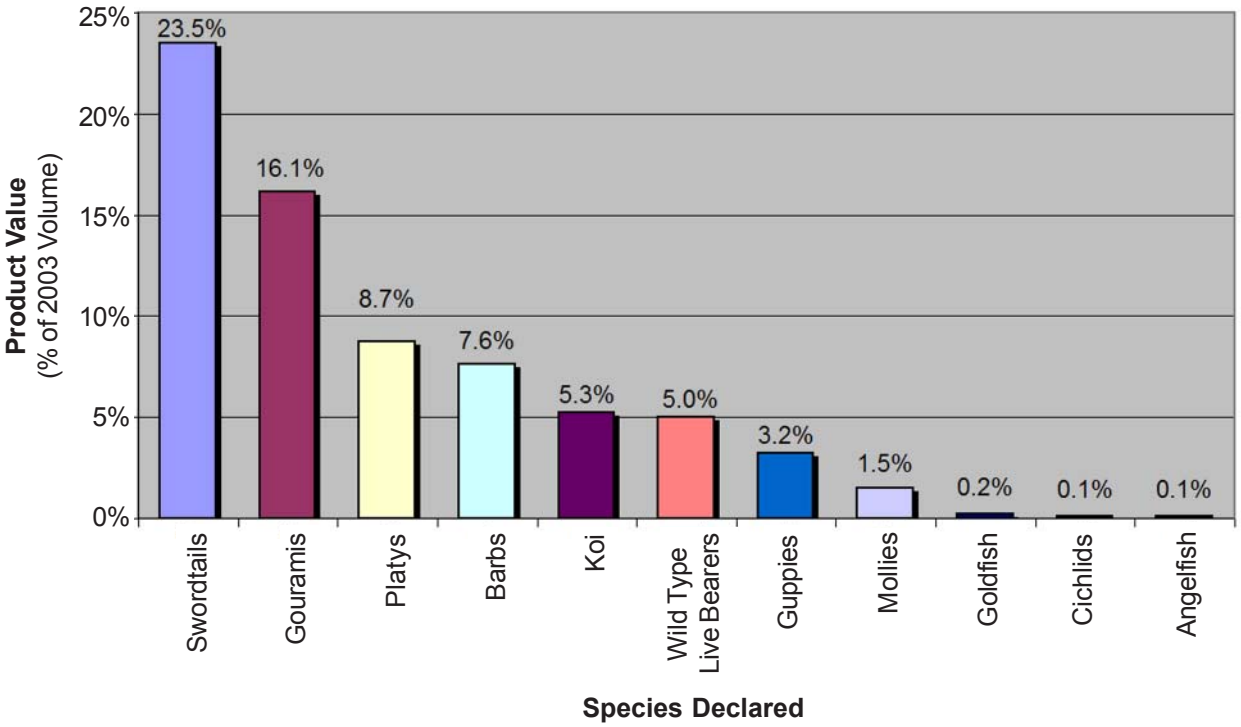
Distribution Network

Nine out of the 16 producers indicated that their primary business activity was farming freshwater ornamental fish. The remaining respondents indicated that their primary activity was retailing, wholesaling, or did not indicate a primary business activity. Most indicated a combination of business activities, often combining farming and wholesaling activities.

Aquarium fish can pass through several hands before reaching aquarists. The ornamental fish distribution network involves several layers (Figure 5), which pad the consumers' retail price (Olivier, 2001a). Suppliers within the distribution network provide services which add value to the ornamental products. The network can be intricate with increasing subsystems, but current trends favor a flattening of the value chain.

In the U.S., retailers control ornamental aquaculture prices (Texas Agricultural Extension Service, 1995). Retailers have the prerogative to choose to buy from transshippers, overseas exporters, importers, local wholesalers, or directly from farmers. Flattening the network hierarchy helps to relieve the pressure of low prices imposed by retailers. For example, transshippers provide an alternative to wholesalers, who charge a premium for their services including re-oxygenation and acclimatization (Olivier,

Figure 4. Ornamental production volume reported for 2003.



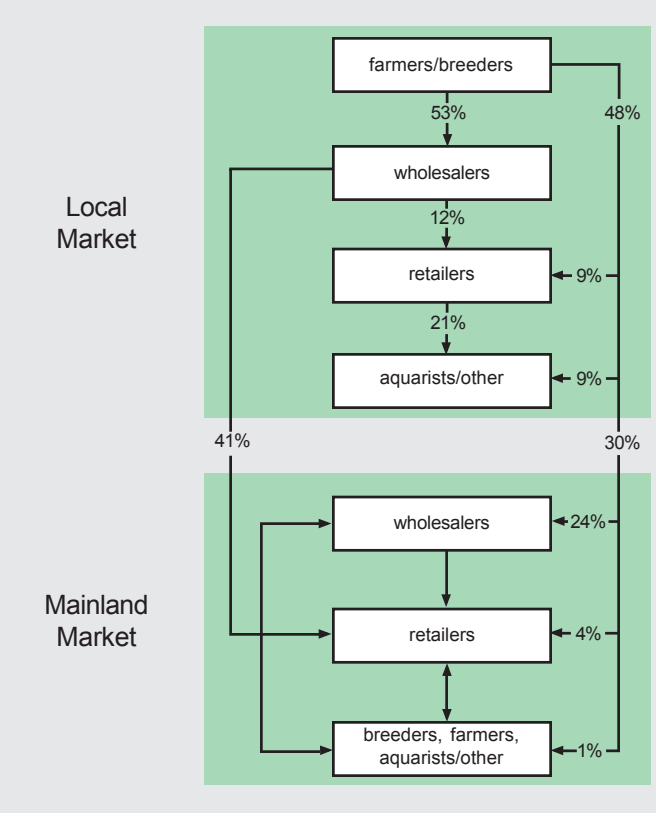
2001a). Breeders and farmers are also beginning to market and export their products directly or through transshippers, bypassing wholesalers and exporters (Olivier, 2001b).

Whereas importers and exporters are responsible for quarantine, transshippers provide consolidating services, which include grouping the orders of multiple retailers, collecting fish at the airport, and redistributing fish to retailers (Olivier, 2001a). Transshippers are not responsible for the quality of the products sold and are sometimes criticized for non-acclimatized fish and high mortality rates. Wholesalers, who serve as a link between producers and retailers, often integrate import and export services into their business. They often share some responsibility in assuring the quality and integrity of the products.

Over 70% of Hawaii's ornamental products are outbound for the mainland. Based on producers responding to the survey, direct sales to mainland retailers is less than half the amount sold directly to local retailers (4.2% and 9.0%, respectively) (Figure 5). Approximately 65% of the reported ornamental sales were from products shipped to the mainland by transshippers/wholesalers (40.5% through local wholesalers and 23.6% through mainland wholesalers). Based on these distribution estimates, Hawaii's ornamental industry could sell as much as 65% of its freshwater ornamental products directly to mainland retailers, breeders, farmers, and aquarists.

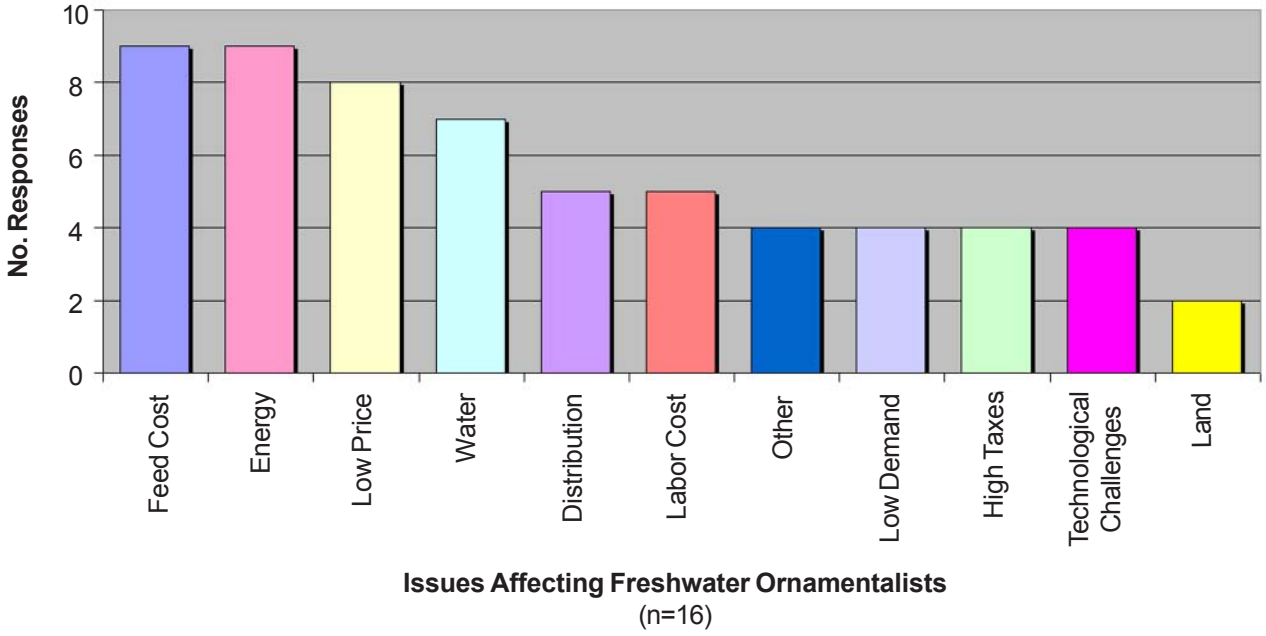
The structure of the ornamental fish distribution network demands that ornamentalists' attend to a variety of business issues. In the next section, we highlight the

Figure 5. Hawaii's ornamental fish distribution network.† (Adapted from Olivier, 2001a).



† Based on 2003 reported sales and distribution. Estimates do not reflect exports to other countries (<1% of total reported sales).

Figure 6. Issues reported by ornamental producers.



most significant issues reported by ornamentalists and describe their impact on the industry.

Ornamentalists' Perspectives

According to those surveyed, resources (i.e., feed, energy, and water), low price, and distribution are major concerns for freshwater ornamentalists (Figure 6). Concerns regarding distribution were backed by "other" concerns for fish supply, shipping, and importation limits. These concerns and the proactive measures taken by some ornamentalists to temper the difficulties imposed by resource costs, low price, and distribution are described next.

Resources: feed, water, and energy

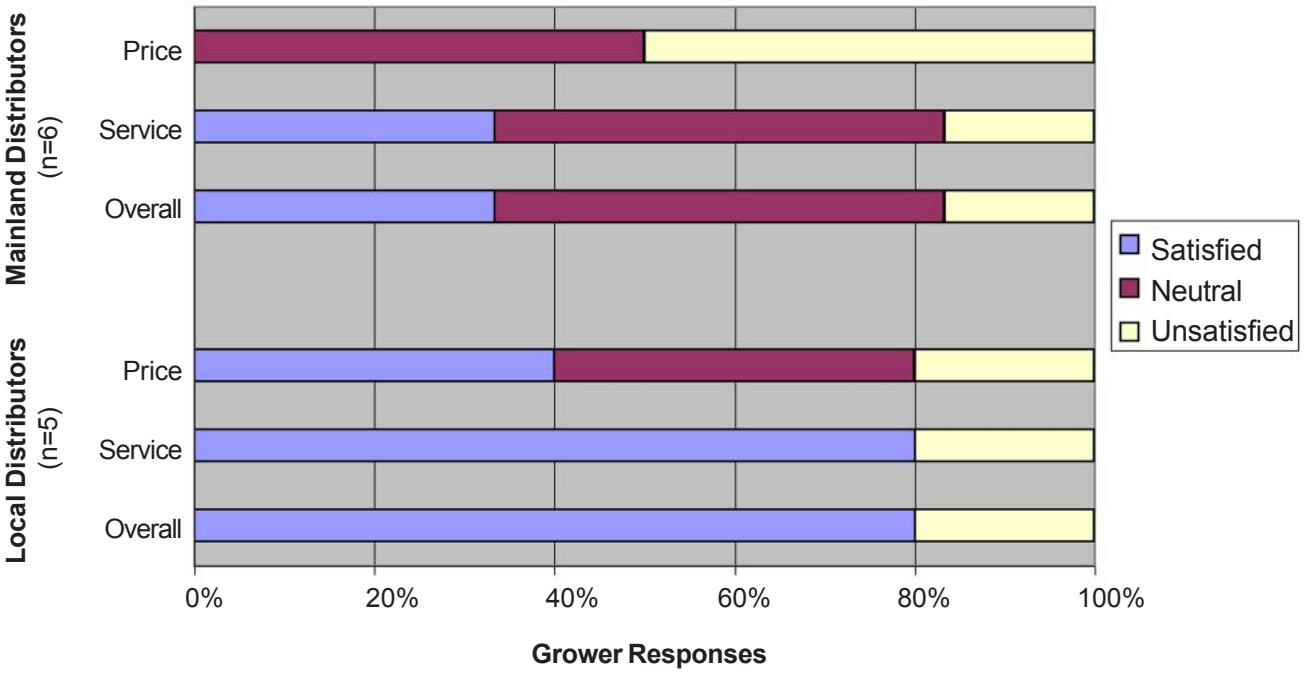
Although feed requirements are much higher for food fish than ornamental fish (Natarajan, 2002), many ornamental growers felt that feed cost had a significant impact on their ornamental operations. For large-scale aquaculture food production, feed and labor are typically among the largest operating costs (Kam et al., 2003a; Kam et al., 2002; Kam et al., 2003b). For the scale of production reported by many local producers, the magnitude of expenses for resources such as feed, water, and energy may be significant in comparison to other expenses such as labor. This is consistent with the moderate and hobbyist production levels and small size businesses (i.e., solely owned, family-owned, or operated by fewer than four employees). Based on those reporting the size of their personnel and production, labor costs appeared to be the concern of larger enterprises with diversified aquaculture activities that extend beyond freshwater ornamental aquaculture.

Low Price

Farmers responding to the survey were generally satisfied with the quality of service and their overall experience with wholesalers (local and mainland distributors). Farmers selling to the local market felt that they had either more control or fair negotiation with wholesalers/transshippers. Accordingly, they were satisfied with the prices of their local distributors. Although ornamentalists were generally satisfied with mainland wholesalers/transshippers, ornamentalists appeared to be dissatisfied with the prices of wholesalers/transshippers that distribute their products to the mainland (Figure 7). The additional layer of intermediaries (i.e., wholesalers and transshippers) forces local producers to keep their prices down. In addition, farmers felt like they had less control in negotiating prices with wholesalers distributing to the mainland. This may be due to the limited number of distributors that are accessible to local growers.

The majority of ornamental producers responding to the survey indicated that they would consider selling directly to mainland retailers/wholesalers (21% maybe, 58% yes), assuming greater risk, in return for higher profits (Figure 8). However, few local farmers sell directly to mainland aquarists. In some cases, they will sell their products online, meeting clients through chat rooms or through auction houses. To reduce the risk of customer nonpayment, most local farmers will request payment upfront

Figure 7. Grower satisfaction with ornamental wholesalers/transshippers.



until a working relationship is established. In many cases, ornamentalists will only accept cash or money orders. Credit card payments are more practical for direct sales to mainland retailers. For online transactions, ornamentalists often use electronic payment services to facilitate check or credit card transactions over the Internet.

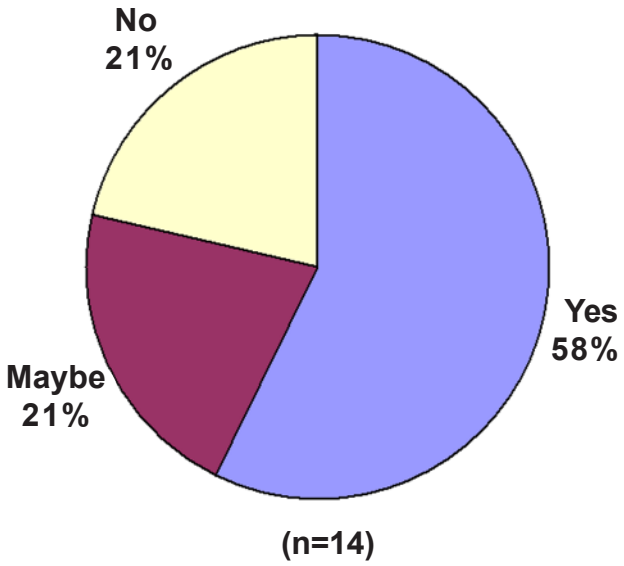
Distribution

In addition to addressing the low profit margins associated with resources and wholesale prices, ornamentalists must deal with a variety of aspects that impede distribution. *Distribution* is affected by problems with *fish supply*, *shipping*, *handling*, and *infrastructure*. We discuss each of these aspects in turn.

Fish Supply. The ornamentalists surveyed obtain their fish from a variety of sources, including other farmers, wholesalers, imports, and their own farms. For example, a farmer may obtain fingerlings from other farmers and broodstock from wholesalers. In some cases, ornamentalists indicated that they import or buy fish from other producers in order to add variety to their catalog of fish.

Hawaii wholesalers were particularly concerned with limited local supply. Product diversity and consistency were the chief complaints of wholesalers. Retailers, in turn, were interested in a reliable catalog of products from their suppliers (wholesalers or producers). Wholesale and retail buyers need to be kept informed of their suppliers' current stock. However, buyers find it difficult to obtain farmers' weekly stock lists, which provide buyers with an estimate of the quantity of products that will be available for upcoming orders. At best, buyers obtain monthly lists from farmers, providing them with only general knowledge of stock availability. In turn, farmers require two-to-three days notice from buyers to purge waste from sold stock in order to minimize risk for disease and mortality during transport. Since most farmers are not equipped with a holding area for large-scale production or a large species assort-

Figure 8. Direct sales to the mainland: Ornamentalists would assume greater risk in return for higher profits.



ment, wholesalers will combine the products of several local farmers to fulfill retail orders.

Shipping. For mainland bound orders, ornamentalists generally pass shipping costs directly onto the customer (i.e., according to weight and carrier rates), but may also charge according to the value or size of an order to incorporate effort spent handling the fish. The cost for shipping can drop significantly for larger orders, e.g., FedEx offers discounted rates for shipments to a single address weighing over 100 lbs ("Hundredweight Pricing"). Some aquaculturists align with plant growers or, if they also farm plants or flowers, have membership with a plant growers association (e.g., Hawaii Flowers & Shippers Association, HFSA[2]) in order to benefit from their discount rates. By obtaining plant and flower industry discounts offered by carriers such as FedEx, ornamental aquaculturists can save approximately 50% on shipping. The airline cargo rate for shipping live fish to the West Coast is approximately $0.60/lb, usually with a minimum charge of $50. Consequently, it is cost effective to ship a minimum of 100 lbs (or three to four boxes weighing 25–30 lbs. each). The size of such an order (typically 1,000 fish) is difficult for most freshwater ornamental aquaculturists to fulfill single-handedly. In addition, individual ornamentalists find it difficult to satisfy retailers' demand for a variety of fish.

Handling (preparing and processing orders). According to those surveyed, regular local orders sold are valued between $100 and $400 (usually over 100 fish), but the value varies widely for mainland orders. For mainland retail orders, one box is a practical minimum. Some producers sell their products directly to consumers (aquarists) in much lower quantities. Lower packing densities are required for products traveling for extended periods of time (72 hours versus the standard 48 hours) to ensure that there is sufficient oxygen and to lower risk of infection (Cole et al., 1999). Consequently, ornamentalists will pack higher value products at lower densities to reduce the risk of mortality and financial loss. Higher quality and more resilient fish can be packed more densely and may reduce the proportion of overhead expenses of shipping and packaging.

It is common to overpack ornamental fish shipments by 5% to 10%. According to local producers, they will usually credit the buyer's account for mortalities beyond the overpack allowance. However, overpack requirements can be subject to abuse. Transshippers help to moderate the abuse and mitigate claims by wholesalers. Transshippers, for example, will sometimes absorb some of the cost of fish losses if mortalities are caused by shipping rather than the health of the fish.

Adequate and affordable packaging is becoming increasingly problematic for Hawaii's ornamental industry. According to Hawaii ornamental producers, they are troubled by the lack of local packaging suppliers. With limited local sources for sturdy insulated boxes, Hawaii farmers might consider mainland and international suppliers for their packaging needs. In order to obtain packaging at competitive prices, large quantities must be ordered to spread out shipping costs. However, with Hawaii's high cost of land, ornamentalists are apathetic toward utilizing leased space for storing packaging materials.

Infrastructure. Ornamentalists are concerned with their ability to tap the West Coast market currently serviced by Southeast Asia. Distribution is challenging for Hawaii ornamentalists due to the combined difficulties of shipping, marketing, and wholesaling/transshipping. Escalating fuel prices have increased shipping rates and led to a shortage of flights ("lifts") out of Hawaii and, more importantly, direct flights to the West Coast. Some ornamental aquaculturists feel that obtaining direct flights may not be as important as choosing an airline carrier that is easy to work with. Furthermore, while FedEx boasts one-day delivery to states west of the Rockies, additional days are required for delivery to remote towns. Consequently, some ornamental fish farmers feel that the traditional United States Postal Service is a more reliable carrier for their ornamental fish products than the in vogue commercial shippers.

Ornamentalists feel that product distribution and supply is challenged by the inspection process that may be required by both federal and state agencies for the import of live animals, which includes aquarium ornamentals. Hawaii's only designated full port of entry is located in Honolulu. Consequently, all foreign-origin fish shipments must be inspected by U.S. Customs Service (Customs), U.S. Department of Agriculture-Plant Protection and Quarantine (USDA-PPQ), U.S. Fish and Wildlife Service-Law Enforcement (USFWS), and Hawaii Department of Agriculture-Plant Quarantine Branch (HDOA-PQB) at the Honolulu International Airport (Cravalho, Domingo, personal communication, November 11, 2004). In addition, domestic-origin fish shipments from the U.S. mainland must also be inspected in Honolulu by HDOA-PQB. Although there has been an increase in direct flights to neighbor islands such as Maui, the neighbor islands lack the full port of entry designation to import live fish products directly. As a result, all products bound for the neighbor islands must first be inspected in Honolulu. The prolonged travel time, potential for misrouting, and additional handling compromises the safe arrival of ornamental fish shipments. Many breeders feel that the added delay along with import requirements, which permit the shipment of conditionally approved listed species, inhibit their ability to acquire the supply needed to raise new varieties of fish.

Presently, the neighbor islands have limited ports of entry that allow for the inspection and clearance of plants, cut flowers, fruits and vegetables, and live seafood intended for consumption. In order for the neighbor islands to be designated as a full port of entry, a petition would have to

be made to the Board of Agriculture or through the governor's office. The privileges of a full port of entry status, however, come at a price. Additional agricultural inspectors must be hired and trained in livestock identification, including disease certification in order to inspect the ornamental fish shipments as well as other domestic animals entering that particular port. Consequently, the additional staffing and skills required for the full port of entry status would have to be justified by the projected benefit to an island's industries and the availability of adequate funding.

Between islands, ornamental aquaculture products are inspected by HDOA-PQB personnel. The inspection process requires ornamentalists to keep packages unsealed for inspection and provide additional documentation including an invoice of the shipment. At the discretion of the HDOA-PQB, fewer packages may need to be inspected. On islands other than Oahu, lower staffing of agricultural inspectors requires that ornamental aquafarmers make an appointment to have their products inspected to ensure HDOA-PQB inspection and certification availability. The total process would undoubtedly require additional time spent on non-farming activities and that products be packaged for a longer period of time. The longer transport duration puts the ornamental fish at risk for increased stress, resulting in disease and mortality.

One recommendation would be to permit approved growers to obtain a product certification stamp that can be affixed to outbound products. The certification program could be similar to the HDOA-PQB export certification program that is available to plant nurseries. Such certification programs require a "Memorandum of Understanding" between receiving states so that certified growers can take their products directly to the airport for shipment to the U.S. mainland. For certified plant nurseries, the stamp indicates that a shipper has a Compliance Agreement with the HDOA-PQB to ship pre-approved plant products out of the state. In addition, certified plant nurseries are able to self-certify plant shipments destined for neighbor islands. However, proposed regulation revisions may further clarify this process. In order to meet compliance, plant producers must meet facility and packing requirements, ensure the use of clean and pest-free nursery stock, and be subject to periodic inspections and re-certification by the HDOA-PQB. A similar self-certification program for inter-island ornamental aquaculture shipments could mean less time spent awaiting approval, thus reducing the burden on agricultural inspection and, in turn, promoting the growth of the ornamental aquaculture industry.

Hawaii suffers from an anti-small business climate caused by a heavy bureaucracy and a pyramid of taxes (Lubove, 1997; Zimmerman, 2001). According to many surveyed, Hawaii's ornamental industry is handicapped by a lack of government support. For example, ornamentalists believe that the State made a humble attempt toward promoting Hawaii ornamental fish as "healthy fish." Ornamentalists feel that consumers can be taught to discriminate between the different qualities of fish and would be willing to pay more for healthier and unique products. Hawaii's ornamental producers believe that the growth of the industry is dependent on coordinated efforts and government support as demonstrated by the ornamental aquaculture industries in Singapore and Florida. Singapore's penetration in the world ornamental market, for example, was made possible by ideal climatic and market conditions, including government support for rearing and transport.[3] Hawaii's aquaculture ornamentalists could negotiate subsidized shipping rates and streamline agricultural inspection processes if the sector had the size and leverage comparable to the plant and cut flower industry. At present, the critical mass of ornamental aquaculturists needed to rally such government support for the industry is nonexistent (Natarajan, 2002).

Summary: The challenges faced by ornamental aquaculturists

Ornamentalists are clearly challenged by a variety of issues, including resource costs, product price, and distribution channels.

- Resources such as feed, water, and energy are viewed as cost constraints by many ornamentalists, particularly small-scale hobbyists.
- Freshwater producers are troubled by small profit margins caused by low prices imposed by retailers and wholesalers.
- Distribution is a major obstacle in the way of direct-marketing to the West Coast. Importation restrictions limit supply and variety, shipping and handling requirements increase mortality risk and overhead costs, and a lack of infrastructure for a stream-lined agricultural inspection process are barriers to distribution.

In the next section, we conclude with a direct marketing outlook, summarizing avenues for producers to market ornamental products to the West Coast, and compare the traditional modes of distribution with direct marketing and cooperative efforts.

Direct Marketing Outlook

Through direct marketing, ornamental farmers have greater control over prices, but take on the responsibilities of the wholesalers (Swann & Riepe, 1992). Market competition is more intense because ornamental products, services, and prices must now compete with that of experienced wholesalers. Consequently, in addition to mastering production techniques, marketing strategies must be consid-

ered. In this section we discuss how direct marketing, both cooperatively and individually, can address the major issues that afflict freshwater ornamentalists.

Direct Marketing

Direct marketing can relieve producers of the pressures of retailers' low prices. A variety of pricing alternatives offers advantages to farmers. For example, as an alternative to offering prices that are simply competitive with wholesalers, higher quality fish may increase a buyer's willingness to pay higher prices. Farmers can enhance the value of their fish by promoting disease-free production, healthier fish, new colors, and specialty factors associated with the "Hawaiian mystique" of rare, exotic, and natural products. Alternatively, producers specializing in a single species can target customers with the availability of a full product line with prices that discriminate between varieties or grades (Swann & Riepe, 1992). Similarly, offering a variety of species, as opposed to a single specie, can serve as a competitive advantage.

Retailers and consumers can go to wholesalers for commonplace products at wholesale prices. Consequently, direct marketing favors high value crops and is amenable for small lots and variable quality (Gibson, 1994). Assuming that there is a market for your specie(s), it is important to determine whether market forces favor quantity, quality, or product variety (Call, 1995). Each of these factors can influence an aquafarmer's product mix and marketing strategy. It is imperative that producers conduct market research in order to determine their fit in the ornamental fish marketplace.

Marketing promotion can be in the form of flyers, brochures, and catalogs. The expense of print media promotion includes the cost incurred for acquiring a mailing list, printing, and postage. A potential boost in direct retail sales may be worth the initial set-up (i.e., layout) fee and printing cost. For about $400, a mailing list with the contact information of over 1,000 retailers can increase a grower's potential market. Farmers can reach their target market by purchasing a list of retailers whose members complement their product expertise. Farmers can further tailor their marketing efforts based on industry codes, sales revenue, and credit ratings that are sometimes provided by mailing list services.

The Internet is also providing low-cost avenues for online product promotion. A commercial account with a local Internet service provider can connect an ornamental producer's business with mainland retailers. Minimal Web site hosting can cost as little as $5 a month, with standard packages costing about $25 per month. E-commerce utilities (e.g., online catalog listings, mailing list management, ordering tools, and encryption) are usually available for an additional fee. At present, many of the ornamental producers surveyed feel that their volume of online retail ornamental sales does not warrant e-commerce service requirements. Hawaii producers who receive retail orders from online shoppers often receive orders via fax or e-mail. Upfront payment is usually required, handled by phone, and accepted by check or credit card.

Web site promotion can draw customers to a Web site. Domain names should be attractive, i.e., short, easy to remember, easy to spell, meaningful, and professional. There are a variety of strategies for making the most of your online presence (based on Klotz, 2002):

- Links to your Web site from local individuals or businesses
- Distributing electronic newsletters
- Sending electronic postcards
- Advertising the Web site on postcards
- Registering on search engines and using "meta tags" which improve the site's visibility to search engines
- Including reliable information and useful content to build consumers' trust in your Web site and products
- Buying banner ads to advertise your site on popular Web sites
- Emphasizing quality products or good prices
- Keeping content current, comprehensive, and fresh, and including attractive product photos
- Providing printable coupons or periodic discounts
- Creating interactive tools to provide product information

Traditionally, accepting credit cards meant purchasing a separate phone line, leasing a credit card machine, paying surcharges per transaction, and incurring a 3% service fee. Online marketing is becoming more accessible with low-cost payment services such as *PayPal*. Online payment services can charge as little as 1.9% and a nominal fee per transaction, depending on your monthly sales volume.

Farmers face unique challenges of shipping, seasonality, and personal connection. For a value product such as ornamental fish, customer relations may be difficult to develop and maintain online. Most farmers are apprehensive about direct marketing because of the customer relations activities required. Consequently, some Hawaii farmers consider hiring a marketing person to work with retailers and handle direct sales. According to some local producers, their current level or expected level of direct retail sales does not warrant the cost of a full-time marketing agent. Consequently, Hawaii ornamental producers might consider hiring a marketing agent on a part-time basis.

Retailers desire a variety of products. However, individual farmers typically master and manage only a few species, making it difficult to direct market a reliable cat-

alog of products. Consequently, it may be necessary for farmers specializing in different products to combine shipments to mainland retailers. Farmers can work cooperatively, either casually or formally, to spread out the costs associated with marketing, sales, and shipping. In the next section, we introduce the concept of agricultural cooperatives and their potential for lowering production costs and facilitating direct marketing activities.

Agricultural Cooperatives

A *cooperative* is a state-chartered business that is controlled by an elected board of directors. In a traditional cooperative, members have one vote regardless of their equity in the cooperative. Equity comes directly from members and profit earned on behalf of the cooperative. Members of a cooperative are only liable for the amount they have invested. Earnings are distributed as cash or equity among patrons, i.e., members active in generating the year's earnings. Credit unions and health maintenance organizations (HMOs) are examples of cooperatives that are able to provide its members with savings and services because the weight of their membership allows them to obtain competitive rates for services and products (Frederick, 1997). Similarly, cooperative grocery wholesalers allow independent grocery store chains to compete with larger chains and discounters. Members of cooperatives have the advantage of economies of size and bargaining power, while maintaining an independent business status.

When properly operated, cooperatives can save time, increase marketing power, gain market access, and reduce costs by sharing resources and spreading out costs among members of the cooperative. Feed costs, for example, can be a significant consideration for small-scale operations. Moreover, bulk purchases can be prohibitive for a small business due to feed shelf life and initial out-of-pocket costs. Aside from selecting species with lower feed costs, producers can look for ways to improve their buying power. Producers in a cooperative can leverage volume discounts not possible by small operations in isolation. Buying in bulk through the cooperative can reduce production costs and the burden of upfront expenses.

Marketing cooperatives can negotiate sale prices and terms of sales with buyers. In this scenario, the cooperative serves as a bargaining association that may compete with retailers' low prices. Cooperatives can assemble the production of individual members into a larger catalog (variety or volume) of products. Added value, services, and consistent supply can earn profits on behalf of the cooperative. Cooperative status also offers legal protection and tax benefits to farmers. Cooperatives have the limited liability protection of a corporation as well as some protection from antitrust laws, which prevents allegations of price fixing (Gibson, 1994). Moreover, unlike corporations whose stockholders share responsibility for taxes on the corporation's net earnings, members of cooperatives are not responsible for the cooperative's net earnings (Gibson, 1994).

There is no established measure to characterize the success of a cooperative. According to USDA Cooperative Specialist Timothy O'Connell, cooperatives that have a functional board, adhere to cooperative principles, are profitable, and have members who are committed to participating in the cooperative are likely candidates for success (personal communication, September 20, 2004). Hawaii has over 50 agricultural cooperatives, ranging from produce marketing to land leasing. Kona Pacific Farmers Cooperative, for example, provides processing and marketing services for its 300 coffee and macadamia nut producers (www.kpfc.com). Through the Hawaii Cattle Producers Cooperative Association (HCPCA), its 40-plus members benefit from shipping and marketing services for their cattle (Gordon, 2001). The cooperative efforts of HCPCA have helped to increase rancher members' profit margins through cost-sharing processing facilities as well as increase members' market share through promotional strategies such as grass-fed beef and "real Hawaiian" beef jerky.

Cooperatives are not an all-purpose solution. A cooperative is only as good as its membership. Cooperatives are more effective when growers sell a high percentage of their crops through the co-op (Gibson, 1994). Moreover, bigger cooperatives are not necessarily better. Small regional cooperatives have been found to have higher profitability than large regional cooperatives (Lerman & Parliament, 1991). According to local producers interviewed, formal membership in a cooperative does not complement some aspects of their business. In particular, it is difficult to enforce marketing agreements and other internal control mechanisms. Cooperatives also tend to suffer from slow democratic decision making (Gibson, 1994; Lerman & Parliament, 1991). Cooperative start-up costs (e.g., incorporation), learning-curve, and management can also be prohibitive. Consequently, many local producers choose to work casually with other producers or develop an individual marketing strategy for their operation.

Collaboration among farmers is generally a positive experience. According to those responding to the survey, collaboration is often casual, but can be in the form of an organized cooperative, a legal entity controlled by its members. Most farmers (seven out of 12) indicated that they would consider joining a cooperative if it would reduce costs (e.g., bulk discounts, reduce shipping costs) or increase bargaining power (i.e., ability to negotiate sale prices). The leverage provided by cooperatives may reduce a farmer's dissatisfaction with wholesaler/transshipper pricing. However, based on those interviewed, farmers appear to be reluctant to formally organize into cooperative business structures due to the overhead required for a co-op

manager, perceived loss of flexibility, and drawn out process for business decisions.

When compared with traditional distribution through a wholesaler, direct marketing and cooperative marketing strategies offer new opportunities and challenges. The effects of these alternative distribution structures on business processes are compared in Table 1 (based on Gibson, 1994). The higher profit margins gained through direct marketing to retailers is expected to compensate for the roles traditionally fulfilled by wholesaler and transshipper services. Non-payment risk, marketing efforts, shipping, and customer relations management become the farmer's responsibility in direct marketing scenarios. Members of a cooperative will seek profit margins that will compensate for the added overhead expense of a cooperative manager and rigidity of a cooperative regime.

Summary

Based on our survey, we constructed a profile of Hawaii's freshwater ornamental industry. The profile summarizes the distribution of production volume and sales for commonly stocked ornamental products. According to the farmers' 2003 sales distribution, we constructed a summary of the distribution network, indicating that 65% of freshwater ornamental products are distributed to the mainland through wholesalers.

Based on our interviews and those surveyed, freshwater ornamentalists only expend a modest effort toward direct marketing their products to the mainland. At present, an estimated 4% of local ornamental products are distributed directly to mainland retailers. Freshwater aquaculture ornamentalists are inhibited by resource constraints, low prices, and difficulties with distribution, including shipping and handling, and the agricultural inspection process. Individually, local producers feel that they cannot satisfy retailer demands for variety, due to import restrictions, technological constraints, and facility constraints.

The barriers to direct marketing channels are lowering as a result of the ubiquity of the Internet and online services. Direct marketing provides a number of benefits, but can be challenging for an individual farmer in the or-

Table 1. Effects of market strategies on business processes.[†]

Business Process	Traditional Distribution (via Wholesaler)	Direct Marketing to Retailers	Marketing Cooperative
Cash Flow	• Longer payment turnaround. • Lower profit margins. • **Lower payment risk.**	• **Shorter payment turnaround.** • **Higher profit margins.** • Greater payment risk.	• Cash flow depends on product volume sold through cooperative and marketing agreements, a comprehensive legal contract with grower-members.
Marketing	• **Less marketing effort by producer.** • Wholesalers market the products to retailers.	• **Easier to test-market products and obtain customer feedback to reduce risk.** • Increased time and resources spent marketing products.	• Reliance on cooperative manager. Management salary and associated expenses. • **Shared cost of marketing efforts, e.g., online and catalog sales and promotion.**
Packaging	• Wholesaler packing requirements.	• **Avoid wholesaler packing requirements.** May be subject to retailers packing requirements. • Mainland bound orders require standard packaging that will withstand shipping.	• **Order packaging in bulk to obtain discounted rates or spread out shipping and handling.**

[†] Bold-faced items reflect potential advantages of each marketing strategy.

Table 1 continued. Effects of market strategies on business processes.[†]

Business Process	Traditional Distribution (via Wholesaler)	Direct Marketing to Retailers	Marketing Cooperative
Shipping	• **Responsibility of wholesaler.**	• **Negotiates shipping cost or passes shipping cost to retailer.** • Included as an additional cost to retailer, i.e., retailer's "landed cost."	• **Combine orders to spread out shipping costs or obtain discounted rates on shipping.**
Distribution	• **Wholesaler's existing retail network.**	• **Pick-your-own markets, pet stores, and other retailers.**	• **Product bundling and larger volumes.**
Pricing	• Reflects market demand, and wholesaler's/ transshipper's profit margin.	• **Ability to set prices based on market demand and available supply.**	• Prices influenced by cooperative agreement and market demand.
Products	• Try to meet wholesaler's needs (based on market demand).	• **Flexibility to experiment with new crops and strains.** • **Unique and variable products may be acceptable. Retailers are often interested in variety.**	• **Ability to offer product variety and complementary products.** • Higher quality control needed.
Customer Relations	• **No direct contact with consumers/ retailers.** Develop good relationship with wholesalers. • Promoting product quality.	• Direct contact with retailers. Increased time spent interacting with customers. • Promoting product quality and price.	• **Share cost of customer relations effort.** Promote image of ornamental aquaculture. • **A cooperative entity is more likely to receive free promotion.**
Structure	• **Responsible for production decisions, but not for marketing decisions.** • Coordination/alliance with wholesaler takes time.	• **Empowered to make marketing and product decisions.**	• **Sharing ideas and information.** • Slow decision-making process and attendance at regular meetings. • Potential conflicts of interest.
Legal Issues	• Responsibility to and agreements with wholesalers.	• License, inspection, and other legal requirements.	• Compliance with state laws of incorporation and taxation. • **Cooperative provides partial protection from antitrust claims.**

[†] Bold-faced items reflect potential advantages of each marketing strategy.

namental fish niche market. As we indicated, the challenges of distribution may be offset through collaboration and cooperation. A state-charted agricultural cooperative, for example, provides a variety of benefits, but with new challenges.

This profile of Hawaii aquaculture ornamentalists, combined with the summary of industry member perspectives and marketing outlook, provides producers with a starting point for evaluating the prospect of direct marketing to the West Coast. The advantages of direct marketing depend on individual business operations, including actual product lines, extent of marketing promotion, operating costs, and desired profitability. An investigation of the financial impact of direct marketing, along with the insights of Hawaii ornamentalists presented in this report, can help freshwater ornamental practitioners to carry out informed business decisions.

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Notes

[1] Farm-level refers to institutions with estimated agricultural products sales of over $1,000.

[2] http://www.hfsa.net/

[3] Recent relaxation in Singapore's government support for the ornamental industry has shifted its primary role from producer to serving as Asia's export hub for ornamental fish.

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