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# Current

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## The Great Emu Bubble: A Retrospective Look at a New Industry Failure

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### The Issue

Innovative new products offer agri-food producers and processors an opportunity to differentiate their output from the commodities prevalent in the sector. Unfortunately, many new products do not live up to initial expectations and are eventually abandoned. However, even with products that are doomed to fail, there is occasionally a period of time after their introduction when strong, but fallacious, indicators of success appear. Sometimes the initial appearance of success is so strong that new entrants rush in, increasing demand and prices for production capacity, thereby strengthening the illusion of industry success. Eventually, supply catches up to the unsupported demand and the bubble bursts. The fall is often dramatic and painful. This paper provides a retrospective examination of the economic factors surrounding one example of such a situation, the Ontario emu bubble between 1993 and 1996.<sup>1</sup>

### Implications and Conclusions

Innovation, new products and new industries are priorities for governments today. Successful creation of a new industry requires a comprehensive analysis of the markets and the production system needed to meet market requirements. The emu industry provides a worst-case scenario of what can happen when such an approach is not taken.



A direct policy implication of this research is the need for attention to building or providing the skills to help new industry participants understand end-market requirements and the production system implications before an industry gets underway. At the very least, before supporting and promoting new agri-food industries, government agencies should ensure that innovators build a complete business case and establish the industry relationships necessary to improve the odds of success.

## Background

In the early to mid 1990s, over 300 Ontario farmers switched production from conventional livestock into ratites, a category that includes emus, ostriches, and rhea. Emu farmers believed that the beneficial health properties of emu would allow the meat to command a market premium over competing products, and the sale of emu oil would provide additional returns. Many producers invested more than \$30,000/pair to purchase breeding stock; some moved out of conventional animal production, reconstructed barns, and purchased specialized equipment to raise the birds. Emus were to be marketed through the Canadian Emu Cooperative (CEMU), but CEMU was unable to expand distribution into conventional retail distribution. Emu producers ultimately had to sell meat directly from their own on-farm businesses or create distribution channels for themselves. Anticipated profits from emu oil, which has some documented health benefits, did not materialize. Labelling regulations for functional foods and nutraceuticals had yet to be defined in Canada. Consequently, health claims concerning emu oil were not allowed and demand stayed low.

The table at the end of this paper tracks the Ontario emu industry from its emergence in 1989 to its collapse in 1995-1997. As a point of comparison, the table also summarizes the experience of the industry in Alberta (Simba, 1997). The industry life cycle was very short, with slow entry, explosive growth, maturation within three years, and a rapid decline within five years, a life cycle pattern typical of a bubble or fad industry.

The spectacular rise and fall of the emu industry provides an exemplary illustration of how unsupported assumptions can lead to speculative bubbles. A speculative bubble is one in which beliefs and attitudes become self-fulfilling prophecies, at least temporarily. Optimism begets optimism, and uncertainty that would ordinarily signal caution or postponement of investment is disregarded altogether.

## An Analysis of the Emu Breeder Bubble

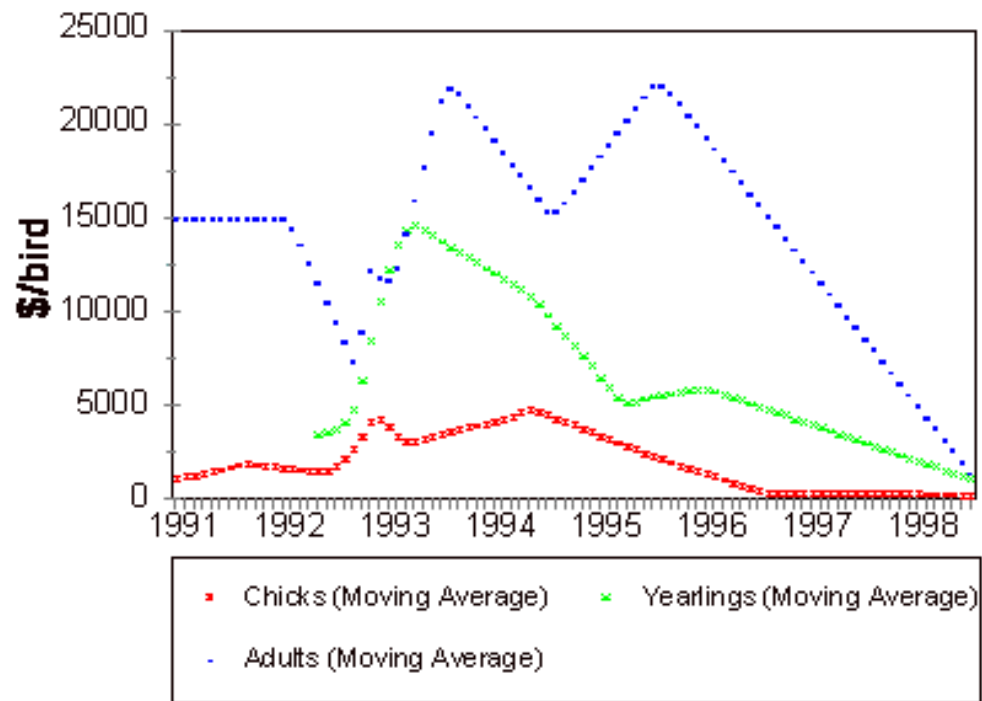
The history of the Ontario emu industry raises several economic issues. The first relates to the historical perspective of the industry and what expectations were used to motivate expansion into emus or other ratites in the first place. How reasonable or rational was the rapid evolution of the production base given uncertainty in consumer demand? Was there recognition of the different market needs and willingness to pay for the product properties? There is a need to determine whether investments in the industry



were speculative in nature or whether there was a genuine belief that a market would emerge. Were investments made without the foresight that too many entrants would cause an excess supply over (real or perceived) demand? The rapid expansion of demand for breeding stock fueled the overcapacity that spelled the end of the bubble. This analysis provides the economic background to the industry experience.

The experience of the emu industry was based on two different product categories, breeding stock, and end products, (emu meat and oil). Although they are inextricably linked, the perception during the early stages of the industry appeared to be that the breeder market could operate unconstrained by the realities of the end-product markets. An examination of the products, their markets, and production and distribution systems helps to understand why the breeder market could initially be so successful and how the realities of the meat and oil markets could so rapidly extinguish that success.

We will refer to the ubiquitous rise and fall in the emu breeder market as the breeder bubble. The breeder market involved the sale of mature two-year-old breeding pairs, yearlings, and chicks. Customers were other breeders, many of them new entrants to the industry. Our data, gathered from published sources and interviews with Ontario and Alberta producers and breeders in 1998, are consistent with the experience in the United States.



**Figure 1** Ontario prices for emu chicks, yearlings and breeders

The supply chain for breeders was simple and the capabilities of industry members were more than adequate to meet its needs. Production was small in scale and initial investment required was relatively low. Marketing tended to be through word of mouth and sale barns. Distribution was either direct from one farmer to another or through a single intermediary. Volumes were low, one to a few animals at a time, and the purchasers, other farmers, were able to wait for their orders to be filled. Competition was limited, particularly early in the life of the industry. In summary, there were no significant production or logistical impediments to the operation of the breeder business.

Initially, the breeder industry flourished. The price of an imported emu (hen or rooster) in 1990/91 was approximately \$15,000. In 1991/92 the market for chicks (and eggs) emerged and the value of chicks increased in a pattern corresponding to that of mature breeding animals, albeit at a discounted price. In 1992/1993 the yearling market emerged for the first offspring from the original breeding pairs. The breeder market developed rapidly and was very speculative in nature. Limited supply and the perception of steadily rising prices finally drove the price for breeding pairs up to more than \$40,000 during 1994-1995 (see figure 1).

By 1995-1996, problems were appearing. CEMU had planned to coordinate marketing on behalf of producers and to source value-added processing, offering buyers consistent quality and supply, and more stable prices. However, CEMU was unsuccessful in finding markets and delivering distribution channels for meat and oil. Without coordinated marketing and the corresponding assurances of supply, penetrating the retail market was impossible. The absence of significant consumer demand inevitably led to overcapacity in the industry. Farmers began marketing their own products, resulting in a cottage industry comprised of many niche players. Like other cottage industries, the emu industry was plagued by a lack of quality standards and an inability to ensure product and

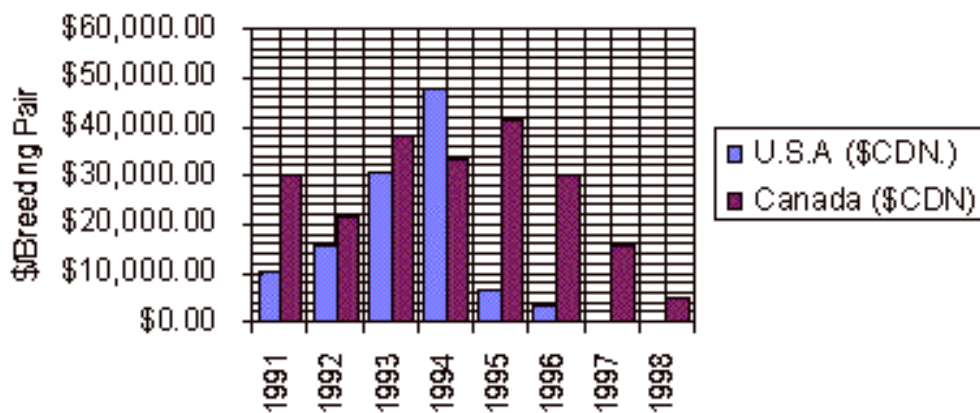


Figure 2 Comparison of average emu prices in Canada and the U.S.

supply consistency. Each player competed at the farm gate or for the processor-retailer-restaurant business, but this was done independently of obvious market signals, and was a highly inefficient use of producers' human resources. With no demand for emus, breeder prices plummeted, paralleling the experience in the United States (see figure 2). The Canadian data points shown in figure 2 were obtained from the farm records of Ontario producers during a series of interviews and meetings in and around Guelph Ontario in the summer and fall of 1998.

There are two basic reasons for the emu market collapse. First, the breeder bubble was caused by excessive speculation in the forward prices of breeder pairs. It was a speculative bubble because there was no early indication of an end-user market, which could actually have been used to discover and support prices in the breeder market. From 1990 to 1995 there was no defined market for emu products at the retail level or as specialty meats. The first research into the retail value of emu meat did not appear until 1995 and 1996 in Louisiana, Texas, and Alberta (Gillespie et al., 1995/1996; TED, 1997; and Simba, 1997). Breeders in Ontario did not appear to view their breeder flocks in terms of meat products, but the only reason for breeders to be in business was the industry's ultimate production of the end products of meat and oil. Production costs provide an indicator that producers were actually speculating on the demand for breeders. Turvey et al. (1999) show that the average total cost for a 15-hen emu operation is approximately \$2,400 per bird per year, with allocations for feed, overhead and so on. The estimates were based on actual farm interviews, as well as numbers provided in Wright and Tapscott (1996) for Ontario, and Gillespie, Taylor and Schupp (1996) for Louisiana.

Using this cost and assuming a \$40,000 investment in a breeding pair (circa 1994-1995), 15 offspring/year/pair, a 25 percent tax rate and an after-tax risk-adjusted discount rate of 10 percent, one may estimate expected proceeds per offspring assuming all are sold as yearlings. Depending upon the holding period of the breeding pair and assuming that all 15 offspring are sold as yearlings, it is reasonable to assume that breeders expected a selling price somewhere in the neighborhood of \$290 and \$582 per yearling. (Note that if these yearlings were to go to the consumer market, the price of emu meat would have to be \$14/kg to \$32/kg simply to recover the cost of the yearlings. This assumes about 16 kg of dressed meat per emu and \$70 for oil.) A high-priced, speculative breeder market might support such prices but there was no indication that the consumer market could ever support this kind of price for yearling emus.

The second reason for the market collapse involved a lack of understanding of the relationships between the products, the markets, and the production systems. Consideration of the biological growth rate in the flocks should have sent an early warning signal that the supply of birds in the breeder market would be a problem unless a strong consumer market for emu developed. Population growth is exponential – a single breeding pair produces 133 breeding pairs within five years and 35,839 within ten years if



the survival rate is 12 chicks/year; if the survival rate is 20 chicks/year, the breeding pair produces 341 pairs within five years, and 287,891 within ten years. A survey of 77 members of the Ontario Ratite Association (ORA) by Wright and Tapscott (1996) revealed an annual growth rate of 24 percent in the Ontario ratite population in 1994; within the sample the number of birds grew from 380 in 1992 to 639 in 1994. The number of birds sold for breeding across all ORA members was estimated at 6,345 in 1994 and might have been as high as 8,000. This kind of growth would not be a problem as long as many of the birds were consumed in the final market for meat and oil. The growth became an issue when no significant consumer market developed. Statistics Canada shows that no emus were processed in Ontario until 1995; even once processing began, only 107 emus were processed in 1995 and 1,103 in 1996.

The breeder bubble arose from speculation by farmers combined with a lack of understanding of the end markets and the business system. Speculation on the value of offspring initially caused prices to rise, and as they rose new entrants perceived that the value must be real. This became a self-fulfilling prophecy in the early years as newer entrants rushed to purchase the birds bred by the early adopters, creating increasing and spiraling speculation. As the population of emu producers grew, so did the population of breeder stock, and prices eased, taking the lustre off the industry. The rate of new entrants slowed, existing breeders were at capacity, and suddenly there was little liquidity in the market. At this point, the industry had to move to its second phase, supplying meat and oil to the consumer markets, in order to absorb the animals produced. When this didn't happen, the oversupply of breeders sent the industry into a tailspin from which it has never recovered. The price of emus fell dramatically throughout 1995 and 1996 and the problem persists to this day.

### **The Economic Realities of Consumer Meat Markets**

The breeder bubble burst when it came up against the realities of competing in large-scale, consumer markets. Consumer market requirements are completely different from those of breeder markets; product characteristics and price are important issues, but the ability to guarantee a steady stream of product within tight quality standards and delivery specifications is also essential to secure access to retail chains. The simple infrastructure and marketing channels that were sufficient for the breeder market were wholly inadequate for serving retail or wholesale food chains. Processing emus became a critical issue; conventional lines for other animals were not suitable, but volume was too low to dedicate processing facilities to emus alone. Small private facilities processed the birds, but there were no grading standards or quality definitions on which customers could rely. A report by PPD Technologies Inc. and the Saskatchewan Agri-Food Innovation Fund indicated that the greatest impediments to the development of any exotic food are the lack of industry infrastructure to develop marketing channels and the lack of



production standards, weights and conformations (Kado, 1997). These were definitely factors in the failure of the emu market.

The retail meat market was changing; red meat consumption was declining while white meat consumption was increasing. Over the period 1979 to 1997 in Ontario, per capita beef consumption decreased from 63.7 to 49.2 kg, and pork consumption decreased from 23.18 to 19.18 kg, while chicken consumption increased from 17.27 to 25.25 kg and turkey consumption increased from 3.92 to 4.21 kg. Emu industry participants were building an industry on the belief that consumers would be willing to shift to more nutritious meats<sup>2</sup> and pay a price premium for those meats. However, demand in the food industry is also built on other attributes, for example, taste, appearance and price. Consumer taste tests in Louisiana (Gillespie et al., 1995/96) found fresh ground emu meat was generally inferior in taste and other attributes to ground beef. Emu steaks were also judged to be inferior to beef steaks, although the absolute differences in quality or perception were not large. Acceptance of emu was complicated by the fact that proper preparation of emu meat was essential to obtain maximum quality, and methods used for preparing beef were inappropriate for emu.

The Louisiana survey also found that different attributes were important to retailers and restaurateurs. For the restaurant business, product form made up 40.35 percent of the rating score, purchase price 39.12 percent, portion size 15.21 percent, and branding 5.32 percent. For the retailer, 51.83 percent of the rating score was based on price, 18.58 percent on product form, 15.31 percent on branding, and 14.28 percent on portion size (Gillespie et al., 1995/96). For the retailer, price is the main concern, as emu has to compete for shelf space with other meat products.

A Texas study of the emu market focused on value-added products such as emu jerky and prime cuts for restaurants (TED, 1997). The study found that there was a need to define standard cuts and terminology. Indications were that health was not an issue in this market. The authors (TED, 1997) cited several cases, such as goat meat or McDonald's McLean burger, for which advertising and promotion focused on health, and where the products failed. Health food stores did show an interest in selling emu products, but only after consumer demand was verified (TED, 1997). Supermarkets were more open to stocking emu meat but price was an issue, and there were fears of low inventory turnover at higher prices. A survey of 250 consumers and four focus groups found that acceptance of taste was high, but knowledge of the product was low and competitive pricing was an issue. The evidence suggested that consumers, retailers, and restaurateurs were not willing to pay a substantial premium for emu meat on the basis of health. Rather, the basis of value in the meat market was taste and quality.

When the emu bubble burst, an excess supply of growing birds and frozen inventory caused market prices to plummet in 1996-1998. According to Ontario producers interviewed, proceeds from the sale of each emu were typically less than \$120 (about



\$7.50/kg) for the meat and \$70 for the fat to be made into oil. The price of emu meat was more than twice the price of beef at the wholesale level, which implied that it would have been in excess of twice the price at the retail level. The industry was unable to persuade consumers that emu meat was exotic enough or healthy enough to warrant such a price premium, and consequently the demand was low, with a marginal rate of substitution with other meats close to zero. In fact, in order to justify grand expenditures for breeding pairs the demand elasticities for meat would have to be fairly elastic so that substitution between meat products was more common than not. Moschini and Moro (1993) have estimated the consumer demand for meat in Canada using aggregate Canadian data. They found that chicken, beef and pork demand are highly inelastic.

**Table 1** Demand Elasticities for Chicken, Beef and Pork

	<b>Chicken</b>	<b>Beef</b>	<b>Pork</b>
<b>Chicken</b>	-0.67	0.15	0.18
<b>Beef</b>	0.06	-0.31	-0.17
<b>Pork</b>	0.12	0.28	-0.50

Source: Moschini and Moro (1993)

Beef and pork demand are highly inelastic with elasticities of -.31 and -.50. Chicken is also inelastic at -.67 but is more responsive to price than beef or pork. A 1 percent rise in the price of beef would increase the demand for chicken by only .15 percent and a 1 percent increase in the price of pork would increase chicken demand by .18 percent. If there is a significant change in preferences from red to white meats, as the ratiite proponents suggest, Moschini and Moro's results suggest that at least on the price side the rate of substitutability is not high. In terms of an increase in the price of white meat, a 1 percent increase in the price of chicken increases the demand for beef by only .06 percent and .12 percent for pork. What is evident from the Moschini and Moro results is that chicken substitutes with beef and pork and vice versa, so there may indeed have been some justification for the assumption that the meat of emu (albeit red in colour) would substitute with beef and pork. While consumer interest would increase at lower prices, it is unlikely that a competitive price would be sufficient to cover the cost of production and provide a reasonable return on equity, or at least allow some producers to recoup their investment on exiting the industry.

## Conclusions, Lessons Learned and Policy Implications

This retrospective view of the Ontario emu market and the breeder bubble of the mid-1990s provides some insights into new product risks. On the production/supply side, the industry was on a shaky footing from the beginning. Market demand for end products did not guide the growth of this industry or the development of the production, marketing and distribution systems needed to support consumer demand. Rather, an inadequate



understanding of the shift in consumer preference towards low fat, low cholesterol and low calorie diets, and faulty assumptions about consumer willingness to pay for these benefits, induced initial production. The industry arose through the promotion of a few early adopters, who failed to understand the economics of this new industry. The push to develop breeding capabilities and the rapid rise in breeder prices created a frenzied market for breeding stock, a speculative bubble disconnected from the realities of consumer markets. Unfortunately, the prolific reproduction rate of emu and the inability to develop an end market led to an oversupply of birds (chicks) more quickly than anticipated, and the bubble burst.

Several lessons may be learned from this ill-fated foray into a completely new agri-food industry. The most obvious is that any industry must be based on real demand. In this case, the industry ultimately had to sell into the consumer market and so a complete understanding of the economic forces operating in the industry was required. This includes an understanding of market entry requirements for price, quality, packaging, service and so on, and knowledge of the order-winning factors, those characteristics which will cause customers to change their purchase decisions in favour of the industry's products. These have to be based on market research, rather than on unsupported assumptions by industry leaders.

The second point is that there must be a complete analysis of the production system requirements along the entire supply chain. While a few in the industry understood the need for a CEMU-like organization to coordinate marketing at the retail/wholesale level, others assumed that they could operate indefinitely in the breeder market, where little infrastructure was required. These points lead to the conclusion that the industry participants should have involved potential customers, processors and ultimate consumers in the analysis of industry potential and direction early in the process rather than after the bubble burst. A slow, reasoned, well-planned development of the industry would have controlled the rate of growth and expectations of producers and might have resulted in a much smaller but more successful industry launch. The process would also have revealed the serious flaws in the industry assumptions and limited the pain for those involved.

The final implication of this research is that there is a role governments can play in assisting new industry initiatives. This role includes helping innovators understand the need for a complete industry approach, and facilitating relationships among the innovators, potential customers and supply chain members so that market potential and marketing/production system requirements can be analyzed realistically before the industry takes off without any real idea of where it is going. In the case of emus, there was limited support by government agencies and almost no analysis until the industry began to fail. At the very least, before supporting and funding new agri-food industries, government agencies can ensure that innovators build complete business cases based on sound economic analysis and establish initial industry relationships.

Innovation is a current priority for most government agencies. However, unless the innovation includes a well thought out implementation plan, the new initiative may be doomed to fizzle before it starts or to repeat the hysteria and heartbreak of a bubble.



**Table 2** Qualitative Review of Ontario Emu Industry 1989–1998

Parameters	Ontario 1989 – 1990	Ontario 1991 – 1993	Ontario 1994 – 1995	Alberta Review
<b>Emu industry development</b>	Two farms enter industry: Crosshill & Hunters.	Continued growth of original breeder farms. Emergence of speculative hobbyist.	Continued attraction of hobbyist and committed producer; exiting of speculative hobbyist (late 1995-1998). Cash flow issues.	Paralleled Ontario industry development but with an 18- to 24-month time lag.
<b>Rationale for entry</b>	Agricultural diversification; a need to experiment; a desire to increase animal husbandry practices; and a need to add excitement to agriculture.	Attraction of more breeders due to momentum built by original entrants. Hobbyist viewed emu as secondary income supplementation. No entry barriers to emu farming.	Value-added aspects of emu.	Mirrored Ontario's producer attractions.
<b>Growth</b>	Slow, few producers enter industry.	Beginning of rapid growth. Many producers are entering industry.	Slowed growth of emu producers after breeder market collapse 1995. Continued slow growth to 1998.	With the time lag in industry development, producers from Ontario and the US have been criticized for dumping birds in province in 1996.
<b>Producer attraction</b>	Emu provides a tremendous opportunity for value-added products; de-commoditization of agriculture; demographics; environmental trend beginning; health issues.	Some emphasis on value-added products by converted farmers/producers. Speculative (hobbyist) primary attraction is aligned with pyramid breeding program (\$\$\$). Little emphasis on value-added products.	Access to cheap birds in speculation of oil and meat market development. Some experimentation in cheap animal husbandry access for oil and meat processing initiatives.	Diversification of agriculture; excess facilities; excess income; encouragement to experimentation in non-traditional forms of agriculture. Development of own feeding programs (successfully lowering input costs).

Continued on next page

Table 2 Qualitative Review of Ontario Emu Industry 1989–1998 (continued)

Parameters	Ontario 1989 – 1990	Ontario 1991 – 1993	Ontario 1994 – 1995	Alberta Review
<b>Media messages</b>	Promotion came from vacationing in southern US, visits to exotic zoos and farm tours. Little general media attention.	Printed and voice media appear highlighting potential of industry and ease of entry into industry. Little interest centred around value-added product markets (potential product uses, success stories).	Consumer applicability of value-added products; slackening of new producer encouragement; bad news stories; questions about industry development.	Initially followed Ontario lead but encountered resistance from beef industry; then primary highlighting of health benefits of emu products.
<b>Emu sourcing</b>	Southern US, Texas, Oklahoma, Florida, Louisiana; some exotic farms/zoos.	Emergence of Ontario breeding industry. Continuation of emus arriving from US sources.	As price dropped all birds sourced in Ontario. US imports stopped.	Originally accessed birds from Ontario, and US until breeding industry died. Now primarily from Alberta.
<b>Industry development emphasis</b>	To introduce breeding industry, seek independence in Canada.	Continued emphasis on breeding industry. Beginnings of meat and oil product markets. Establishment of the ORA (access to birds). Entry of input industry competitors – high priced feeds, equipment, etc.	Concentration on value-added aspects of emu; emergence of CEMU and subsequent retail trials; some export now being completed in breeding stock. Access to federal and EU processing facilities.	As time lag after Ontario caused disturbances in industry, associations were formed and a coop established but to little success. Currently, a \$5 million facility being developed privately to process alternative livestock (EU and Fed. approved).
<b>Type of markets</b>	Farm-gate sales only.	Mostly farm gate; small experiments in retail chains and independents.	Independent retail development for value-added products.	Currently, retail and farm-gate sales. Some movement into tourism industry.
<b>Stated government role</b>	Access to veterinary care.	Continued veterinary access; little support in market development and product development. Some assistance in packaging but most self-developed.	Support and facilitate industry organizations; some involvement in animal husbandry; some action on emu definition; encourage business plan development and not cash flow analysis.	Originally mirrored Ontario initiatives but now is making large effort in marketing/exporting. Involvement with Agriculture Canada research group on carcass and feeding programs.

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## Endnotes

<sup>1</sup>Those who feel this was an isolated incident need only look at the problems experienced by other novel agri-food ventures, from peanuts and ginseng in Eastern Canada to game herds in Western Canada, to see that the danger of speculation in new products is a recurring one. As this paper was going to press Gillespie and Schupp (2002) published a related paper on speculation in the U.S. ostrich industry that may also be of interest to readers.

<sup>2</sup> Gillespie et al. summarize USDA nutrition results showing that emu has significantly lower levels of fat, cholesterol and calories than beef, but the same level of protein.

