Market Study
On
The British Columbia
Ratite, Waterfowl and Game Bird
Industries

Final Report
January, 2002

Executive Summary
& Game Bird Section

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EXECUTIVE SUMMARY

1. FORECAST FOR GROWTH - 2002 to 2007

The following chart outlines our forecasts for ratite, waterfowl and game bird industry growth over the next two and five years with and without the major constraints to growth being removed. These constraints are detailed within the balance of this executive summary. The growth rates are based on our impressions of the industries and our understanding of the factors that contribute to them.

Bird Type		**Constraints Removed**		**Constraints Not Removed**	
		Growth Rate			
	Current Sales	2 year	5 year	2 year	5 year
Emu	600 (e)	60%	300%	20%	100%
Ostrich	400 (e)	100%	500%	20%	100%
Ducks	N/A	20%	100%	6%	30%
Geese	N/A	10%	25%	2%	5%
Squab	500,000 (e)	30%	100%	15%	50%
Silkies	1,100,000	30%	150%	5%	15%
Japanese Quail/ Quail Eggs	2,000,000 quail (e) 3,000,000 eggs (e)	20%	60%	15%	50%
Pheasant	25,000 (e)	20%	50%	5%	20%
Chukar Partridge	5,000 (e)	10%	30%	5%	10%
Partridge Tinamou	5,000 (e)	100%	1000 %	50%	100%

The production figures included in this chart are estimates (e) derived from discussions with the industry and available statistics. Ducks and geese do not have production numbers as although Statistics Canada collect the slaughter numbers by province they do not report them as such due to confidentiality issues. The total slaughter of ducks and geese in Canada in 2000 was approximately 4,500,000 birds.

While this chart indicates that all of the bird types included in the study will increase production over the next few years, production will increase to a much greater degree if the constraints are removed.

Some, such as tinamou, have a very low base to start from so an increase of only 50 birds per week is a 50% increase in production. This is also true of ostrich and emu. Others, such as silkies and squab, have grown very quickly already and will need additional markets in order to maintain their growth trend. Silkies, as well, will be dependent on policies regarding production for export markets.

Ducks and geese are very dependent on the opportunity for marketing beyond provincial boundaries in order to grow while pheasants could also benefit from the development of such markets. The other bird types continue to show growth with the constraints having a minimal effect.

2. RESEARCH AND ROLES - AVIAN RESEARCH CENTRE

The following are recommendations for research to be conducted and roles to be undertaken by the Avian Research Centre. These arose from the interviews with the industries and the review by the consultants and steering committee. They are aimed at removing some of the constraints to achieving the industry growth required.

Ratites

- Expanded efforts on hatching and chick growth keying on feed and feeding regimes to build sturdy legs, a major key to productive stock
- Development of recognized genetic strains for emu, as such do not exist today, and further development of ostrich strains for meat production
- Research into the use of fat soluble vitamins to enhance growth and productivity
- Determine the reasons for chick mortality
- Use of diatomacious earth to provide trace minerals and treat worms (nematodes)
- Investigate the best types of grasses to grow for palatability and nutrition for ostrich grazing
- Study feed cost versus production efficiency for both breeds
- Investigation into breeder feeds to maximize viable egg output
- Determination of the reasons that emu oil works on the various ailments and investigate reported therapeutic properties of ostrich oil
- Undertake emu oil studies specific to the medical profession, especially with dermatologists for skin problems, and work to determine the effect on cholesterol levels, Crohn's disease, ulcers, the use of oral oil capsules for arthritic pain and for radiation burns
- Create standardized oil products
- Develop additional value added emu and ostrich meat products
- Serve as a conduit or clearinghouse for production and marketing information and as a catalyst for development of a producer organization for the ostrich industry

Waterfowl

- Assistance in the development of programs supporting the promotion of ducks and geese among consumers
- Development of production regimes for alternative products such as fois gras and magret
- Assisting in the development of innovative value added products for the industry
- Serving as a catalyst for development of a producer organization and as a conduit for production and marketing information

Game Birds (all types)
- Serve as a catalyst for development of a game bird producer organization or organizations and act as a conduit for production and marketing information for these groups.

Squab
- Identification of meat production blood lines and hybridization opportunities
- Investigation of breeding success, chick mortality and disease control
- Development of robotic feeding systems for young squab to increase production per breeding pair

Silkies
- Investigation of hybridization and cross breeding for silkie to improve production numbers and size

Japanese Quail and Quail Eggs
- Development of genetic strains and hybridization to increase the numbers and size of the finished product
- Development of value added products using quail eggs

Pheasant
- Research on production methods for pheasants which would work in wet weather
- Development of innovative value added pheasant based products

Chukar Partridge
- Development of value added products

Partridge Tinamou
- Ongoing research on tinamou on production problems and efficiencies
- Identification of clientele and marketable characteristics

DETAILED SUMMARY

1 BACKGROUND

This report reviews the current supply and demand situation for ratites, waterfowl and game birds as it affects the BC industries. An assessment has been made of the competitive situation and the nature of potential market opportunities.

The report covers the following bird types:

Waterfowl	Game Birds	Ratites
Ducks (Pekin & Muscovy for meat)	Squab (includes breeder pigeons)	Emu (oil, meat, leather)
Duck eggs	Silkie chickens	Ostrich (meat, leather)
Geese	Japanese quail (meat & eggs)	
	Pheasant	
	Chukar partridge	
	Partridge tinamou	

The study also provides a framework for setting development and research priorities for the industry and the Avian Research Centre at the University of British Columbia (ARC). The findings support a level of assurance to industry, government and funding agencies that monies spent in the area of production research will contribute to industry expansion.

2 DEMOGRAPHICS

It is generally conceded that for many of the species included in this study that the primary markets revolve around the demand created by Chinese and South Asian ethnic groups in North America. The exceptions are ratites, pheasants and partridge which are used primarily by European style restaurants and, to a lesser extent, geese which have a European tradition for holiday use. Ratite meats and oils also appeal to health conscious consumers of all ethnic backgrounds.

An increasing Asian origin population is anticipated to drive the demand for most of these commodities in North America. The rate of growth of these ethnic communities provides some insight into the potential market growth for the game bird and waterfowl products.

- The Asian origin population in the US has increased 44% in the 1990-1999 period and now comprises about 11 million people

- The largest concentrations of Asian ethnic population in the US are in California, New York and Hawaii
- The US Asian population is growing very rapidly in the US South (e.g. Texas, Arizona), the Eastern seaboard and Northeast (e.g. New Jersey)

- The Canadian Asian origin population is comprised of approximately 2.3 million people of which almost a million speak various Asian languages at home. The largest component of this subgroup is Chinese speaking. Of these, 47% (276,000) reside in Ontario (86% in Toronto) and 35% (205,000) are situated in BC (93% in Vancouver).

- The flow of Asian origin immigrants into Canada has dropped off substantially in the last few years. The economic climate in BC has not been supportive of Asian immigration in the last 2-4 years. This is expected to improve as the economic conditions improve, taxes are reduced and BC presents itself as a more friendly environment for international business interests.

- The base population of Asian immigrants already established in BC, Canada and North America is sufficient through its internal expansion to provide a growing market for many of these bird types.

3 RATITES

3.1 Emu

3.1.1 Products and Markets

Emu is a native of Australia where the first commercial farms began in the 1980's. There are now emu farms throughout the world. Although the meat, and to a lesser extent, leather, eggs and feathers are sold into mainly local markets, the primary output from emu production is the oil made from the back fat of the bird. This fat is high in oleic acid and omega 3 and omega 6 essential fatty acids and is used for a range of skin conditions and its anti-inflammatory properties.

Emu oil is receiving broad exposure within the health food industry although the total sales and growth in the market is slow. There are a few medical doctors who have embraced it’s therapeutic attributes along with a number of sports trainers and injury specialists. The report contains information on a number of studies which have been done to determine the therapeutic actions of emu oil on a number of conditions.

There are no global statistics for farmed emu but the limited information available supports the conclusion that farmed emu numbers in the USA now exceed those in Australia.

Marketing of emu products, especially the oil and oil products, are carried out through health food and wellness stores and retail health food departments. In addition a large number of producers are marketing direct to consumers and over the internet. Meat is handled primarily through local meat markets and HRI (hotel, restaurant and institutional) distributors. Leather and leather products in Canada are usually direct marketed by the producers.

3.1.2 Industry Growth Trend

Emu ventures in various countries have gone through, or are going through, development phases that virtually all new commodity enterprises experience on their way to becoming established industries. At the embryonic stage, emu farms were started by hobby producers. Increasing interest in the new enterprise lead to the speculative phase where the economics of the industry were largely lead by the escalating prices obtained for hatching eggs and breeding stock. Production of stock increased without the corresponding development of the markets for the products (meat, oil, hides, eggs and feathers), resulting in a collapse of the breeding stock market and rapid declines in the numbers of growers. In the commercial phase, which those remaining emu producers are currently experiencing, the birds are being produced and sold based on returns that reflect the value of the end products in the market place. This restructuring is resulting in industry growth again, albeit slowly.

- Emu producers are primarily looking to oil for development of market demand for emu. While there is interest in developing markets for the leather, most of the sales by producers are in finished leather craft products that they have made or have had produced
- Emu oil is developing markets slowly as the anti-inflammatory and other therapeutic properties of the oil are becoming recognized by segments of the population
- The markets for emu meat are primarily local in nature but are growing slowly as producers and local meat markets develop a loyal clientele for the products

3.1.3 Industry Strengths

- The industry has maintained its organization and that has assisted in transferring production and marketing information between the growers
- The emu industry has continued to pursue and develop the market for emu oil with a number of producer/distributors expanding their markets in the BC and Canadian markets
- Emu product distribution systems are developing through wholesalers, direct to health food stores and health food departments in grocery or department stores, direct from the producer/marketer, and over the internet. Some producer/marketers are now buying product, both oil and meat, from other producers to supplement their own production

3.1.4 Industry Weaknesses

- The size of the industry does not support the promotional efforts necessary to obtain rapid growth
- The acceptance of emu meat within the hotel and restaurant sectors is low

3.1.5 Industry Opportunities

- Some producer/marketers are building markets for the emu products of sufficient size that they will required emu from other producers
- Those producers willing to put the time into direct marketing of their emu products appear to have significant opportunities for local markets of oil, meat and leather products

3.1.6 Industry Constraints

- Enormous time and effort required to develop markets for the oil
- Cost of medical research to support and promote the therapeutic aspects of the oil
- Limited funding for research on production and genetic factors which are responsible for creating oil with the highest therapeutic levels
- Negative response of some health food stores to products derived from animals
- The problem in obtaining economical slaughter of the birds within reasonable transportation distance and the certification of the slaughter plants which determines where the end product may be marketed

3.2 Ostrich

3.2.1 Products and Markets

Ostrich is a native of Africa and has been farmed in South Africa since the 1860's. The industry was originally based on feathers but declined in the early 1900's. In the late 1960's, demand for ostrich leather revived the industry although the leather market grew slowly during the 1970's and 1980's. However, in Australia, New Zealand, USA, Canada, Europe and China the market for ostrich leather has increased since the late 1980's. During the latter 1990's the other ostrich product, meat, became the primary production with demand peaking in Europe with the problems
they experienced with diseases in European beef cattle.

3.2.2 Industry Growth Trend

In North America, New Zealand and Australia, the production of ostrich went through an expansionary phase, based on inflated breeder pricing and then a contraction as sales began to reflect the value as a meat and leather producer. Today production is starting to rebuild for those regions that can ship into the EU, based on the expanding markets or alternative meats in the aftermath of the European BSE and hoof and mouth cattle disease outbreaks. BC production is rebuilding more slowly as it is based on the growth in consumption within the province, almost exclusively through the restaurant sector.

South Africa, the US and Israel have been the main producers of farmed ostriches. In 1999, it appears that US ostrich numbers may have overtaken South African numbers. Most recently, the Australian ostrich population has also become significant. The numbers of birds slaughtered world-wide has risen from about 82,000 in 1987 to 500,000 in 2001, yielding about 15,000 tonnes of ostrich meat.

- The cattle disease problems in Europe and their search for alternative red meats has created awareness of ostrich meat as one option. This concern also appears to have developed in North America

- The ostrich industry is growing slowly as the meat becomes accepted within the restaurant and hotel sector as a profitable menu addition
- A few meat markets are experiencing growing sales of ostrich meat to health conscious consumers
- Ostrich producers are also beginning to market ostrich oil, suggesting that it too has some therapeutic properties, similar to emu oil
- The ostrich leather market is well established, having trade in the skins themselves, and has historically determined the ostrich slaughter. Meat demand has now replaced leather in this role
- Ostrich feathers are no longer a fashion novelty although they do still have limited use in costume manufacture

3.2.3 Industry Strengths

- The increasing demand for ostrich meat globally due to the European disease crises has created increased awareness in the BC and Canadian markets

3.2.4 Industry Weaknesses

- Problems in obtaining economical slaughter of the birds
- BC slaughter plants are not EU or Canadian federally approved, which would allow them to access European or other Canadian and North American markets
- There is an absence of any organized producer group resulting in little production and marketing information being shared or promotion of the industry to governments and user groups

3.2.5 Industry Opportunities

- The presence of an EU approved processing plant would permit opportunities for meat sales into Europe
- With constant production at steady competitive prices, more restaurants and food service outlets will be inclined to use ostrich as a regular item on their menu

3.2.6 Industry Constraints

- Knowledge limitations regarding nutrition, productivity and herd management
- The problem in obtaining economical slaughter of the birds within reasonable transportation distance and the certification of the slaughter plants which determines where the end product may be marketed

4 DUCKS (PEKIN & MUSCOVY) AND GEESE

4.1 Products and Markets

Ducks and geese have been produced for meat and eggs for centuries and are known throughout the world. Muscovy is the most versatile type of duck to prepare with consistent quality and availability while Pekin is characterized by medium size and light flavour and has been the primary breed used in Asian cooking. Goose is generally used at special events such as holidays, is usually a good buy and generally underutilized by restaurateurs.

Fresh duck eggs are currently being marketed through the Chinese communities however another egg product showing considerable growth are duck baluts or hot vit lon. These are partially incubated duck eggs sold as a snack delicacy in Filipino and Vietnamese communities.

4.2 Industry Growth Trends

Global production of both ducks and geese are growing at a steady pace with production spread through most of the world. Canadian and BC production reflects this trend. A very high percentage of duck and goose meat utilization is within Asian communities and this is reflected in the markets for the products within Canada and the USA.

Much of the increased demand is for the larger, leaner Muscovy ducks for both the large traditional Asian markets and for European style restaurants which are purchasing Muscovy duck breasts in greater numbers. Pekin duck continues to have the largest production with most of the product going into Asian restaurants. An large Ontario producer/processor has recently taken steps to expand this market, however, through the use of innovative technology to develop and market fully-cooked duck entrees to upscale international customers.

The duck industry in Canada is composed of a few large commercial producers of Pekin ducks with many small operators supplying product such as Muscovy ducks to processors or direct to restaurant or retail outlets.

- The largest Canadian duck producers are located in Ontario and Quebec and have developed international markets for their products
- Goose production is centred in Manitoba
- BC production is located in the Lower Mainland and services the BC market. This is expected to expand, however, as the largest BC duck producer and processor has applied for federal inspection which will allow shipment beyond provincial borders
- The BC industry are producing duck baluts or hot vit lon with much of the product going to US markets
- Internationally the market for goose is growing well, primarily in Asian countries
- Local markets for geese appear to be quite static and holiday specific
- Although there was little statistical data, it appears from industry discussions that there are also increasing markets for top quality fois gras and magret which increasingly being produced

from Muscovy or Moulard ducks as compared to geese

4.3 Industry Strengths

- Duck production and marketing in BC is well developed with one major and many smaller producers serving the BC market
- Quality of the BC product has been consistently high with good market acceptance
- Some duck products such as baluts and hot vit lon are already entering the US market, paving the way for additional duck products when the BC processor becomes federally inspected

4.4 Industry Weaknesses

- There is a deficiency in BC Muscovy duck production to serve the BC markets

4.5 Industry Opportunities

- There are opportunities to increase the supply of Muscovy or similar style ducks in order to supply the BBQ duck and duck breast market
- There is potential to produce fois gras and magret to replace imported product currently coming in from the US and Europe
- Markets outside the province have promise once the full federal plant is in place to service them

4.6 Industry Constraints

- While a change to full federal inspection is said to be imminent, the major BC duck producer/processor has been operating under federal/provincial certification which does not allow the sale of product beyond provincial

5 GAME BIRDS

5.1 Squab

5.1.1 Products and Markets

Squab is young pigeon which is fed by its parents and slaughtered before leaving the nest, at about 4 weeks of age. Squab usually dress out at about 75% of body weight or 1 lb. This meat product has

been used extensively in Asia and Europe as well as the Middle East and North Africa. Squab meat is moist, dark and tender, with a mild flavour.

Global production of pigeon meat is centered in Egypt with 76% of the world production. Despite that overwhelming level of production, Egypt is not a major player in world trade in pigeon meat. Europe is the largest exporter of pigeon meat while Asia, particularly China, is the largest importer.

5.1.2 Industry Growth Trend

The trend in global production of squab has been positive with FAO data reporting a 25% increase between 1991 and 2000. North American production is a very small portion of the total and is not represented in the statistics.

Canadian production of squab has increased dramatically over the past few years with BC having the largest production followed by Ontario. BC squab finds its way into markets in eastern Canada with a small amount going to the Western US, as well as supplying a large proportion of the BC market. The US is a major North American producer with production centered in California and South Carolina.

In North America, squab is sold primarily into the Chinese Asian markets as well as upscale European style restaurants. Per capita consumption of squab by Chinese in the BC market is approaching that of Hong Kong, a benchmark market with the largest per capita consumption of squab in Asia.

With the main demand for squab coming from the ethnic Chinese restaurant trade, the growth in the markets reflect the demographics of the Chinese communities and the acceptance of squab as a menu item. Production in BC has grown from about 80,000 birds in 1995 to 500,000 birds in 2000 whereas Ontario, with a larger Chinese community, is hovering at the 200,000 bird level.

5.1.3 Industry Strengths

- A good structural base with three processors and markets which continue to accept the product in increasing amounts
- The favourable exchange rate differential between Canada and the US has also allowed movement of squab into US markets

5.1.4 Industry Weaknesses

- There is little market development activity within the European style restaurant market which would allow squab to be introduced to a much larger demographic
- There is no effective producer organization for promotion of greater cooperation and sharing of information on production and marketing

5.1.5 Industry Opportunities

- Expansion of sales into other Canadian cities as per capita consumption of squab within the Chinese community in those cities increase
- Aggressive development of markets for squab with European style restaurants

5.1.6 Industry Constraints

- There are a number of production problems such as chick mortality, feed conversion and disease control which serve to reduce production to sub-optimum levels
- Additional markets will be required in order to maintain the growth levels that they are experiencing
- Lack of funding for production related research aimed at increasing the production per breeding pair and decreasing the cost of getting a squab to market weight

5.2 Silkie Chickens

5.2.1 Products and Markets

Silkies are an ancient Chinese breed of bantam chickens having very fine fluffy feathers and a black or blue skin and meat. They are used by Chinese, predominately those from Mainland China, for their meat and are considered medicinal. Silkies fall within the Gallus genus, which has implications for their production and marketing in Canada.

The level of global production of silkies is not known as they are not differentiated from other chickens in the data although in 2001 BC produced approximately 1,100,000 of these birds. In North America, the primary consumers of these bantam chickens are the Chinese origin population. North American production is primarily in California, South Carolina, and British Columbia. The major markets for silkies are in cities with larger Chinese populations, such as New York and Los Angeles in the US and Vancouver and Toronto in Canada.

5.2.2 Industry Growth Trend

The demand for silkies is growing due to increases in numbers of Chinese in the North American markets and as existing markets are further penetrated with lower priced product. Product distribution is primarily through distributors serving the Chinese-origin retail trade.

There is currently an a substantial market for BC silkies within the US West Coast states, primarily California, due to the differential between the US and Canadian dollars. There appear to be further opportunities for market penetration both in eastern Canada and elsewhere in the US, according to industry sources. The incentive for BC producers to take advantage of these market opportunities is tempered by the requirement for producers to purchase production quotas under the poultry supply

management scheme in order to legally grow silkies.

5.2.3 Industry Strengths

- The BC silkie industry is well established with a number of substantial growers and processors
- There are well developed markets in both Canada and the US
- The current favourable exchange rate

5.2.4 Industry Weaknesses

- There are claims that some of the product being sold as silkies is in fact product produced from a silky/broiler chicken cross
- The lack of an industry association to work with the BC Chicken Marketing Board in the development of industry policies which would allow the development of additional markets

5.2.5 Industry Opportunities

- Expansion of existing markets and entry into additional markets within the US

5.2.6 Industry Constraints

- The control of new silkie production by the BC Chicken Marketing Board through the requirement for purchase of existing quota is a cost that has the potential to limit production for emerging markets.

5.3 Japanese Quail/Japanese Quail Eggs

5.3.1 Products and Markets

Japanese quail or coturnix have been domesticated since the 12th century and are grown for:
- the production of meat throughout Asia (including India), Europe and North America.
- animal research
- hunting, in many countries
- eggs which are used for fresh and processed products

These are small birds producing a 120 to 180 gram eviscerated carcass at 7 to 7 ½ weeks. Quail eggs

are used wherever chicken eggs are but are most often pickled.

5.3.2 Industry Growth Trend

The production of Japanese quail as a meat bird developed over the past century with major expansion in the past decade. In North America, commercial production is concentrated on a few large farms in the US and Canada. BC has one large producer and production in the order of 2,000,000 quail per year. In addition there is significant production of quail eggs which are sold in consumer markets.

The market for quail is expanding, primarily into the restaurant and food service trade, as the industry produces a very consistent portion controlled product. A considerable part of this market is located in California with much of the BC production going there. In addition the BC market for quail eggs is over 3,000,000 eggs per year.

Immunoglobulin fraction (IgY) is being derived from the egg yolk of the Japanese quail egg in experimental work. The product superior to mammalian IgG and is expected to be produced and sold commercially for medical use.

5.3.3 Industry Strengths

- BC has one large quail producer who has developed markets both in BC and in the US. This operation continues to expand

5.3.4 Industry Weaknesses

- There is little known about the markets for quail and quail eggs as the information is proprietary

5.3.5 Industry Opportunities

- The portion of the quail demand in BC which is currently supplied from eastern Canada could be replaced by BC production

5.3.6 Industry Constraints

- Local markets which are not being served by BC product

5.4 Pheasant

5.4.1 Products and Markets

Pheasant is a traditional game bird originally used mainly for hunting but now raised for both meat and hunting preserve use. For the most part the breeds used for commercial production and hunting preserves differ. A native of Asia, pheasant found fame in Europe as a hunting and eating bird. Pheasants have a dressed weight of about 1.2 kg and reach market weight at about 20 weeks. Most pheasant are raised in large fully enclosed outside pens with one main crop per year.

The global market for pheasant is very thin with most of the product being used in up-scale restaurants. North American production is centered with a few large producers and many hobby farmers. In addition there are a considerable number of hunt clubs, in jurisdictions where they are approved, which produce pheasant for use on their properties as well as for release on public lands. This sector of the business produces much lower numbers and usually use different types of birds.

5.4.2 Industry Growth Trend

The demand for pheasant in European style restaurants has been relatively stable over the past three years. Increased demand within the US for Canadian product has been bolstered by the exchange rate of the Canadian dollar although the Canadian industry, primarily in Ontario, has also developed an international reputation for a quality product in recent years. The US remains a much larger producer of pheasant, however.

The BC pheasant industry at present is composed of one large commercial producer plus a number of other producers who have produced pheasants in past and have intentions to do so in the future. In addition there are a few hunt clubs and their suppliers. BC production has been stable for a number of years and appears to be in balance with the local markets although there is eastern pheasant coming in as not all customers purchase from the one distributor handling the BC grown product.

5.4.3 Industry Strengths

- The BC production is mainly produced by one grower who sells through one distributor. This has lead to stable prices and usage. Export is used to balance inventories

5.4.4 Industry Weaknesses

- The ease of producer entry and exit to the industry can lead to rapid changes in production levels and corresponding de-stabilization of prices
- The current industry composition with only one producer selling through one distributor limits market penetration as not all restaurants purchase from that distributor
- There is no industry strategy to systematically develop domestic or export markets

5.4.5 Industry Opportunities

- Export development into the US
- Development of value added pheasant products
- Replacement of pheasant currently coming in from eastern Canada

5.4.6 Industry Constraints

- The BC industry is based on whole bird sales whereas other Canadian and US producers are also marketing value added pheasant products
- The ease of producer entry and exit exposes the industry to rapid movements from under to over production and widely fluctuating farm gate returns

5.5 Chukar Partridge

5.5.1 Products and Markets

Chukar partridges originated in Asia and were brought to North America in the late 19th century. They thrive in dry arid and semi-arid regions of the western US where they have been used primarily for hunting. Over the past century, Chukars have been domesticated for meat consumption in the restaurant market. Chukars are from the pheasant family and are about 60% the size of pheasants, about 1 to 1 ½ lbs. live weight. In the US they are one of the most commonly kept and bred of all game birds, most often for hunting reserves and release.

Chukar partridge does not appear to be a global industry. Within the US and Canada most of the production is used locally, either for hunting or offered along with other game birds as a frozen product. Demand in the restaurant trade is said to be low and quite seasonal with production geared to the cooler months.

5.5.2 Industry Growth Trend

The market for chukar partridge is very thin and seasonal with limited movement in demand. There are significant problems in balancing over and under production as the markets are very price sensitive to this. Production is sporadic, depending on whether the producer feels that the time is right to make a profit and there is barn space available.

5.5.3 Industry Strengths

- Within BC there are a number of producers who have the expertise to produce the product

5.5.4 Industry Weaknesses

- Inadequate market development within existing restaurant markets to encourage additional demand

5.5.5 Industry Opportunities

- Development of value added products to extend the marketing season and range of potential users

5.5.6 Industry Constraints

- Seasonal demand
- Little or no communication between producers

5.6 Partridge Tinamou

5.6.1 Products and Markets

Tinamou is a partridge that is native to Chile and which has been developed experimentally for commercial production by the University of British Columbia. There are currently two flocks, one at UBC and one with a producer. The birds finish at about 350 grams dressed at 13 weeks as compared to quail which finish at 5 ½ to 6 weeks at 160 to 200 grams.

Development of production and markets for this product is in its infancy, not only within BC but in world production and markets. It is primarily known as a wild bird in South America, suitable for hunting.

5.6.2 Industry Growth Trends

BC is attempting to introduce tinamou to the marketplace so that it can secure a portion of the markets that are being developed for game birds. BC is presently producing about 100 tinamou per week with the product moving slowly into selected restaurants.

5.6.3 Industry Strengths

- Local BC production with a dedicated producer
- UBC research facility to assist in developing production efficiencies

5.6.4 Industry Weaknesses

- The current cost of production is resulting in non-competitive wholesale pricing

5.6.5 Industry Opportunities

- There appears to be some differentiated consumer demand for tinamou

5.6.6 Industry Constraints

- Current costs of production which lead to a higher price in the markets than other similar products
- Lack of knowledge of consumer preferences and reasons for appeal of the product

TABLE OF CONTENTS

LIST OF TABLES

1.0 INTRODUCTION

This report assesses industry characteristics, by bird type, in the BC game bird, waterfowl and ratite industries. The data and information presented represents "best efforts" to compile industry statistics, conduct assessments of market trends and identify industry constraints and opportunities. The primary purpose of the study is to compile information from various jurisdictions to develop a framework for both industry and the Avian Research Centre at UBC (ARC) to identify:

- industry needs
- priority areas for promoting industry growth
- priorities for production level research

The study provides a framework for setting development and research priorities for the industry and ARC. There are indications of real potential within industry sub-sectors and it is imperative that limited research resources be placed where they can have the greatest impact and provide positive return on research investments.

The BC game bird, waterfowl and ratite bird types investigated in this study are listed in Table 1-1.

Table 1-1
Bird Types of Game Birds, Waterfowl and Ratites Examined in this Report.

Waterfowl	Game Birds	Ratites
Ducks (Pekin and Muscovy for meat)	Squab (includes breeder pigeons)	Emu (oil, meat, leather)
Duck eggs	Silkie chickens	Ostrich (meat, leather)
Geese	Japanese quail (meat & eggs)	
	Pheasant	
	Chukar partridge	
	Partridge tinamou	

Ratites include ostrich, emu, rhea, kiwi and cassowary. The term ratite is used to describe flightless birds having sternums without a keel. These birds have no common ancestry.

Although some of these bird types such as pheasant, ducks and geese have been produced in BC for several decades, others are relatively new to the Province. Squab has been produced commercially in the Lower Mainland and Vancouver Island for over ten years while ostrich, emu and silkies were introduced in the early 90's. Partridge tinamou is currently in the early stages of commercialization with flocks located at the University of British Columbia (UBC) and in the Fraser Valley.
Characterized with new products serving new and emerging markets, these various alternative poultry industries are constrained by an absence of industry strategy and lack of funding for production and marketing research. In many cases, these industries have not reached production levels that lend

themselves to production efficiencies that could enable market expansion. This does not necessarily mean that the products cannot grow into larger production over time, but simply that they are in an initial growth phase where production, processing and marketing constraints still abound. If these alternative poultry industries are able to address development constraints and attain large enough production levels to create a "critical mass", support for ongoing research will be forthcoming. At the present time, with limited resources it is difficult for the alternative poultry industries to fund the research needed in both marketing and production to allow expansion to take place.

This report provides an indication of the competitive situation and the nature of potential market opportunities. It also provides a level of assurance to industry, government and funding agencies that monies spent in the area of production research will lead to industry expansion.

1.1 Critical Success Factor Checklist

The following listing developed by an Australian consultant[1] outlines the development phases that virtually all new commodity enterprises go through. Understanding these phases will provide insight into the continued development of the game bird, waterfowl and ratite sectors.

1.1.1 Embryonic Stage

- discovery of new enterprise
- developed as a hobby or adjunct to a commercial farming operation
- individual private research
- generates local interest

1.1.2 Speculative Stage

- attract public funding
- attracts quick buck entrepreneurs
- no commercial production, productive units are used to service the demand for breeding stock
- large number of small operators
- prices drop once demand for breeding stock becomes saturated (3 to 4 years)
-

1.1.3 Commercial Stage

- new entrants that get in early and don't pay exorbitant prices for stock
- emphasis on adopting farming practices to improve productivity and product quality
- government takes notice and begins to support the industry

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[1]David McKenna et al Pty Ltd. 1999. Marketing of new animal products. A report prepared for the Rural Industries Research and Development Corporation. Australia. Pub. No. 99/53. April.

- farm gate returns fall as production increases and demand is oversupplied
- less efficient operators leave the industry
- most efficient are able to generate acceptable returns

1.1.4 Maturity

- characterized by stagnation in production levels and consolidation in the number of farms
- exhibits commodity cycles and mixed profitability
- industry is well organized with good links with government
- involvement of large corporate farms with large production units, processing, value adding and trading arm

1.1.5 Crunch Time

- always in the transition period between speculative and commercial
- venison, emu and ostrich industry have fallen on difficult times
- Tasmanian aquaculture has been much more successful
- key factor was the ability of government to control production through the management of breeding stock and control of farming leases

1.1.6 Australian Ostrich Example

- managing the price adjustment that occurs when the price of production units reflects its commercial value rather than its speculative value
- if speculative prices remain high, only poor quality birds are culled, resulting in insufficient product to support a commercial slaughter facility and inferior product quality
- lack of available product restricted essential market development and commercialization functions, such as product tasting, cooking trials, testing and evaluation
- as a result, demand did not develop at the rate required to absorb production increases
- transition occurred overnight, with predictable price drop and financial ruin to many investors

1.1.7 Problem Solving

- Need to understand the concept of critical mass requirements re:
  - volume to support an economical processing and value adding infrastructure
  - volume to support economical trading and distribution networks
  - volume to support an effective market development and promotional program
  - volume to provide administrative support and to finance long term development

- chicken and egg situation in which volumes have to reach levels to support adequate product and provide resources to support necessary systems and programs. At the same time, in order to get volumes up to threshold levels, the systems and structures need to be in place.

1.2 Demographics & Relationship to The Industry

It is generally conceded that for many of the species included in this study that the primary markets revolve around the demand created by Chinese and South Asian ethnic groups in North America. The exceptions are ratites, pheasants and partridge which are used primarily by European style restaurants and to a lesser extent, geese which have a European tradition for holiday use. Ratite meats and oils also appeal to health conscious consumers of ethnic origins across the spectrum.

Nevertheless, Asian origin demographics in Canada and the US are anticipated to drive the demand for many of these commodities and growth of these ethnic communities is expected to provide some insight into the potential markets for the game bird and waterfowl products.

1.2.1 Canadian Demographics

Tables 1-3 and 1-4 present breakouts of selected Canadian components of the population by selected home language, visible minority and province. Tables 1-5 and 1-6 show the percentage representation on the selected visible minorities in relation to the provinces and Canada, respectively.

In 1996, Canada's population of visible minorities originating from Asia was 2,315,000, or 8.1% of the total Canadian population. Of these, 858,625 people, or only 3%, spoke various Asian languages at home although Asian "ethnic" eating habits do not appear to be dependent on this. Indeed our growing cosmopolitan culture suggests that Asian dishes are now being enjoyed by many people of European extraction.

Based on the presence of the unofficial language spoken at home, these ethnic groups are spread across Canada, but concentrated in BC and Ontario with 29% and 48% of the total subgroup, respectively.

Within the subgroup, the largest ethnic component is the Canadian Chinese-speaking population, representing 2.1% of the Canadian population, and consisting of about 587,000 persons. This group is concentrated as follows:

- Ontario - 46.7% - of which 86% reside in the Toronto area
- BC - 35.3% - of which 93% reside in the Vancouver area
- Alberta -9.6% - of which 49% are located in Edmonton and 43% are in Calgary

The second and third largest ethnic components of potential interest to the game bird industry are Vietnamese and Arabic speaking, each with under 100,000 in population, nationally. Although the largest proportion of Vietnamese resides in Ontario (47%), about 21% of Canadian Vietnamese-speaking citizens are located in Quebec, 15% in BC and 13% in Alberta. The bulk of Arabic-speaking Canadians are located in Ontario (49%) and Quebec (39%).

National immigration trends are indicated in Table1-7. Before 1961, fully 61% of Canadian immigrants came from western Europe, principally the UK, Germany and the Netherlands. In the 1991-1996 period, this earlier pattern changed as immigration from Hong Kong, the People's Republic of China and Taiwan rose dramatically, accounting together for 44.6% of the total immigration (216,615 persons) in the period. After 1996, Asian-origin immigration continued to increase until recently.

1.2.2 US Demographics

Table 1-8 breaks out the US Asian population trends from the total US population for the 1990-1999 period.

While the US total population has grown 9.6% in the 1990-1999 period, the Asian segment has increased 44%, or from 3% to 4%, comprised of about 10.8 million persons in 1999.

Table 1-8 shows present statistics on the US Asian population broken out by four regions. While the West region, comprised of Mountain and Pacific zones, has been the area of greatest concentration of Asian origin US citizens, the proportion of Asians in the West Region has declined in the period from 56% to 52.4% of the total US Asian population. The Northeast and South represented 19% and 18% of US Asian population in 1999, respectively, and the population in these regions has grown faster than in the West and Midwest (i.e. 51.8% and 67.5% compared to 35.7% and 49.4%).

The major US centres of Asian population are also shown in the Table 1-8. The state of California accounted for 37.3% of the total US Asian population in 1999, followed by New York (9.5%), Texas (5.3%), New Jersey (4.3%) and Illinois (3.9%). In 1999, California is home to about 4 million US Asian citizens. Other states with Asian populations over one quarter million are New York (1 million), Hawaii (750,000), Texas (577,000), New Jersey (469,000), Illinois (426,000), Washington (344,000), Florida (281,000) and Virginia (258,000).

In the 1990 to 1999 period, the Asian population in the US has increased most rapidly in the states of Georgia (109%), North Carolina (99%), Florida (80%), Arizona (76%), Texas (74%) and New Jersey (70%). Growth in largest Asian population states in the period has been significant but somewhat slower (e.g., California (36.8%), New York (44.5%)and Hawaii (8.3%).

In summary, the Asian population is spreading out in the US. Traditional areas of concentration have been California, New York and Hawaii. More recent growth areas are the South (Texas, Arizona and the eastern seaboard) and the Northeast (e.g., New Jersey).

1.2.3 Comparative Demographics, Canada and the US

- The US Asian-origin population (approximately 11 million) is about equal to the population of Ontario

- The Canadian Asian population component in 1996, (Asian language speaking at home) was about the same size as the population of Asian origin in Texas (577,000) in 1999.

- The Chinese-speaking population in BC in 1996 (207,000) was about equal to the Asian-origin population of Pennsylvania or Maryland in 1999.

Table 1-3
Canadian Population by Selected Home Language, 1995.

	BC	Alberta	Saskatchewan	Manitoba	Ontario	Quebec	Rest of Canada	Canada
Total Canadian Population	3,689,755	2,669,195	976,615	1,100,290	10,642,790	7,045,080	2,404,400	28,528,125
Arabic	2,355	6,000	330	435	44,850	35,565	2,040	91,575
Chinese	207,255	56,590	4,560	7,570	273,955	33,760	3,115	586,805
Korean	13,160	2,845	105	665	22,650	2,345	215	41,985
Persian	9,745	1,185	250	390	26,280	6,355	280	44,485
Vietnamese	13,950	12,050	1,185	1,670	44,000	20,045	875	93,775
Subtotal of the Above	246,465	78,670	6,430	10,730	411,735	98,070	6,525	858,625
All Other	3,443,290	2,590,525	970,185	1,089,560	10,231,055	6,947,010	2,397,875	27,669,500

Source: Statistics Canada. 1996 Census.

Table 1-4
Canadian Population by Selected Visible Minority, 1995.

	BC	Alberta	Saskatchewan	Manitoba	Ontario	Quebec	Rest of Canada	Canada
Total Canadian Population	3,689,755	2,669,195	976,615	1,100,290	10,642,790	7,045,080	2,404,400	28,528,125
South Asian	158,435	52,565	3,795	12,110	390,055	47,585	6,045	670,590
Chinese	299,860	90,480	8,830	12,340	391,090	50,360	7,190	860,150
Korean	19,050	4,705	305	1,045	35,400	3,925	410	64,840
Japanese	29,815	8,280	420	1,670	24,275	3,030	645	68,135
Southeast Asian	25,355	20,295	2,920	4,520	75,905	42,130	1,640	172,765
Filipino	47,080	24,380	2,920	25,910	117,365	14,815	1,725	234,195
Arab/West Asian	20,090	17,830	1,185	1,890	118,660	79,705	5,305	244,665
Subtotal of the Above	599,685	218,535	20,375	59,485	1,152,750	241,550	22,960	2,315,340
All Other	3,090,070	2,450,660	956,240	1,040,805	9,490,040	6,803,530	2,381,440	26,212,785

Source: Statistics Canada. 1996 Census.

Table 1-5
Canadian Population by Selected Home Language, Percentages, 1995.

	BC	Alberta	Saskatchewan	Manitoba	Ontario	Quebec	Rest of Canada	Canada
				Percentage of Canadian Total				
Total Canadian Population	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Arabic	2.6%	6.6%	0.4%	0.5%	49.0%	38.8%	2.2%	100.0%
Chinese	35.3%	9.6%	0.8%	1.3%	46.7%	5.8%	0.5%	100.0%
Korean	31.3%	6.8%	0.3%	1.6%	53.9%	5.6%	0.5%	100.0%
Persian	21.9%	2.7%	0.6%	0.9%	59.1%	14.3%	0.6%	100.0%
Vietnamese	14.9%	12.8%	1.3%	1.8%	46.9%	21.4%	0.9%	100.0%
Subtotal of the Above	28.7%	9.2%	0.7%	1.2%	48.0%	11.4%	0.8%	100.0%
All Other	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Source: Statistics Canada. 1996 Census.

Table 1-6
Provincial Populations by Selected Home Language, Percentages, 1995.

	BC	Alberta	Saskatchewan	Manitoba	Ontario	Quebec	Rest of Canada	Canada
				Percentage of Provincial Total				
Total Canadian Population	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Arabic	0.1%	0.2%	0.0%	0.0%	0.4%	0.5%	0.1%	0.3%
Chinese	5.6%	2.1%	0.5%	0.7%	2.6%	0.5%	0.1%	2.1%
Korean	0.4%	0.1%	0.0%	0.1%	0.2%	0.0%	0.0%	0.1%
Persian	0.3%	0.0%	0.0%	0.0%	0.2%	0.1%	0.0%	0.2%
Vietnamese	0.4%	0.5%	0.1%	0.2%	0.4%	0.3%	0.0%	0.3%
Subtotal of the Above	6.7%	2.9%	0.7%	1.0%	3.9%	1.4%	0.3%	3.0%
All Other	93.3%	97.1%	99.3%	99.0%	96.1%	98.6%	99.7%	97.0%

Source: Statistics Canada. 1996 Census.

Table 1-7
Origin of Immigrants Arriving in Canada, By Place of Birth, Before 1961 and Between 1991 and 1996.

	Before 1961		Between 1991 & 1996	
	Number	%	Number	%
Hong Kong	n/a	0.0%	45,565	21.0%
People's Republic of China	6,645	3.6%	28,435	13.1%
Taiwan	n/a	0.0%	22,735	10.5%
India	n/a	0.0%	21,725	10.0%
Philippines	n/a	0.0%	15,165	7.0%
South Korea	n/a	0.0%	6,700	3.1%
UK	62,990	33.9%	6,595	3.0%
US	7,215	3.9%	6,410	3.0%
Iran	n/a	0.0%	4,780	2.2%
Viet Nam	n/a	0.0%	4,765	2.2%
Germany	23,040	12.4%	n/a	0.0%
The Netherlands	17,100	9.2%	n/a	0.0%
Italy	10,995	5.9%	n/a	0.0%
Poland	6,350	3.4%	n/a	0.0%
Denmark	5,230	2.8%	n/a	0.0%
Hungary	5,160	2.8%	n/a	0.0%
Ukraine	3,055	1.6%	n/a	0.0%

Source: Statistics Canada. 1996 Census.

Table 1-8
Population Estimates for the US of Asian and Pacific Islander Origin, By Selected State 1990, 1995 and 1999, US Census.

	1990	% of Total	1995	% of Total	1999	% of Total	Growth 1990-1999
Total US	248,790,938		262,803,276		272,690,813		9.6%
US Asian	7,466,513	3.0%	9,407,801	3.6%	10,820,421	4.0%	44.9%
		% of US Asian		**% of US Asian**		**% of US Asian**	
Northeast	1,362,178	18.2%	1,753,976	18.6%	2,067,124	19.1%	51.8%
Midwest	780,640	10.5%	995,608	10.6%	1,166,417	10.8%	49.4%
South	1,145,049	15.3%	1,572,029	16.7%	1,917,463	17.7%	67.5%
West	4,178,646	56.0%	5,086,188	54.1%	5,669,417	52.4%	35.7%
Arizona	58,362	0.8%	83,742	0.9%	102,539	0.9%	75.7%
California	2,951,722	39.5%	3,619,858	38.5%	4,038,309	37.3%	36.8%
Florida	156,444	2.1%	227,592	2.4%	281,366	2.6%	79.9%
Georgia	76,819	1.0%	119,837	1.3%	160,566	1.5%	109.0%
Hawaii	695,564	9.3%	743,058	7.9%	753,591	7.0%	8.3%
Illinois	292,421	3.9%	363,523	3.9%	426,006	3.9%	45.7%
Maryland	141,271	1.9%	179,952	1.9%	209,147	1.9%	48.0%
Massachusetts	146,030	2.0%	192,350	2.0%	233,239	2.2%	59.7%
Michigan	106,666	1.4%	134,900	1.4%	166,287	1.5%	55.9%
Minnesota	78,577	1.1%	106,666	1.1%	130,537	1.2%	66.1%
New Jersey	277,024	3.7%	378,451	4.0%	469,435	4.3%	69.5%
New York	709,127	9.5%	890,311	9.5%	1,024,625	9.5%	44.5%
North Carolina	53,102	0.7%	79,163	0.8%	105,689	1.0%	99.0%
Ohio	91,929	1.2%	113,925	1.2%	132,638	1.2%	44.3%
Oregon	70,239	0.9%	92,431	1.0%	110,015	1.0%	56.6%
Pennsylvania	139,966	1.9%	177,495	1.9%	202,969	1.9%	45.0%
Texas	331,428	4.4%	467,620	5.0%	577,306	5.3%	74.2%
Virginia	161,195	2.2%	211,935	2.3%	258,371	2.4%	60.3%
Washington	215,454	2.9%	287,332	3.1%	343,690	3.2%	59.5%
Rest of the US	771,535	10.3%	1,021,402	10.9%	1,196,635	11.1%	55.1%

Source: US Census Bureau.

5.0 SQUAB

Squab is young pigeon which is fed by its parents and slaughtered before leaving the nest, at about 4 weeks of age. Squab usually dress out at about 75% of body weight or 1 lb. This meat product has been used extensively in Asia and Europe as well as the Middle East and North Africa. In North America squab is sold primarily into the Chinese Asian markets as well as upscale French restaurants. Squab meat is moist, dark and tender, with a mild flavour.

Squab are produced in clutches of 2 eggs with a breeding pair of pigeons able to produce between 8 and 14 squab per year using two nest boxes. The squab are fed for the first few days on highly nutritious crop milk. Over time they receive a mixture of crop milk and regurgitated feed from the parents until at two weeks it is entirely regurgitated feed.

Squab do not have gall bladders and it is customary to serve the liver intact, if roasted whole. Meat is layered, not marbled and the bird has a lack of fat. Taste is the most gamey of the domestic birds.

5.1 Sector Summary

5.1.1 Global Production and Trends

The Food and Agriculture Organization (FAO) reports world production and trade in pigeon meat. However, meat of pigeons refers to meat of pigeons and other birds not otherwise specified (in fresh, chilled and frozen state) in the FAO data. Pigeons and other birds includes partridge, pigeon, quail, turtle dove, pheasant, etc.

Global production of pigeon meat is centered in Egypt with 76% of the world production. Despite that overwhelming level of production, Egypt is not a major player in world trade in pigeon meat. Europe is the largest exporter of pigeon meat while Asia, particularly China, is the largest importer. It should be noted that European exports are larger than their production and imports combined, leading us to believe that it may be serving as a trans-shipment point.

Although the market which does not appear in FAO statistics, the North American market for squab meat is of primary interest to BC producers. Squab consumption in North America is mainly with the Chinese or other Asian ethnic communities, with a very high percentage of the product moving through the restaurant trade. Per capita consumption of squab by Chinese in the BC market is approaching that of Hong Kong, seen as the market with the largest per capita consumption of squab in Asia. Chinese communities in other parts of Canada, particularly Toronto, lag behind in assumed per capita consumption.

The USA is a major producer of North American squab with production centered in California and South Carolina and markets throughout the US.

The production of squab has increased dramatically in BC and to a lesser extent, Ontario, in the last few years. Production of squab has also increased in the US.

5.1.2 Demand, Market and Distribution Trends

The demand for squab is coming from the ethnic Chinese restaurant trade although there is steady usage by European style restaurants. Distribution is mostly direct from the processor within BC and through distributors in other markets. The demand is growing in concert with the demographics for the community and somewhat faster where the ethnic markets have not embraced the product to the same extent as on the West Coast.

5.1.3 Marketing Issues

The major marketing issue is the concern of US producers and processors about increased BC squab in their markets at highly competitive prices. As BC production increases, more product is anticipated to move into central and eastern Canadian markets and into the US. The squab markets are very price sensitive and react quickly if quality product is available at lower cost.

5.1.4 Industry Structure Issues

The industry appears to have a reasonable structural base with three processors and markets which are accepting the product on a regular basis. Concern was expressed by one game bird producer that participants need to be more industry-oriented, open and willing to exchange ideas and information. One option for promoting greater cooperation would be the creation of an effective grower organization.

5.1.5 Industry Challenges

The primary challenges are to overcome productivity constraints related to squab production per breeding pair, feed conversion and cost of production. A number of such issues have been recommended for action by the Avian Research Centre.

5.1.6 Industry Needs

The industry will require additional markets in order to maintain the level of growth that they appear to be experiencing. The anticipated growth area is the Asian ethnic markets that currently use the product. The European style restaurant market should be further developed and squab introduced to a much larger demographic.

5.1.7 Recommendations

The squab industry should look at organizing to share production and marketing information. In addition, the industry should find ways of funding production research in order to increase the production per breeding pair and decrease the cost of getting a squab to market weight. BC is in a good position to remain a major player in the industry but must take advantage of the lead they have over Ontario and the current price advantage they have over California, due to the favourable exchange rate.

5.2 Canadian Pigeon Industry

Table 5-1 contains information on the total game bird slaughter for Canada for the years 1990 to 2000. Since 1993, the Canadian squab slaughter has grown at a compound rate of about 5% per year. This is remarkable considering the complex immigration dynamics that have characterized the BC Chinese community in the period.

Table 5-1
Canada Game Bird Slaughter, 1990 - 2000 (000's of Birds).

Year	000's birds
1990	6,857
1991	6,217
1992	7,420
1993	10,461
1994	7,741
1995	8,184
1996	9,081
1997	9,195
1998	9,336
1999	9,514
2000	10,581

Source: Agriculture and Agri-Food Canada. CFIA Inspected Establishments.

Table 5-2 shows information on Canadian game bird imports and exports in the same time period.

Table 5-2
Canada Game Bird Trade, 1990 - 2000, Kilograms.

Year	Imports	Exports	Net Exports
1990	210,183	260,322	50,139
1991	235,062	326,779	91,717
1992	164,837	277,168	112,331
1993	112,339	362,468	250,129
1994	105,954	341,690	235,736
1995	90,211	492,608	402,397
1996	111,953	517,718	405,765
1997	93,975	419,790	325,815
1998	78,374	617,499	539,125
1999	53,336	194,274	140,938
2000		487,107	

Source: Agriculture and Agri-Food Canada. CFIA Meat Inspection Certificates.

5.2.1 British Columbia

Neither of the above Tables break out squab numbers from other game birds processed or game bird type by province. Nevertheless, it is known that British Columbia currently produces over 500,000 squab per year while Ontario produces approximately 200,000.

In BC, the squab sector is growing rapidly with 21 producers and a three BC processing plants, the last of which began processing squab in May 2001. The production in BC in 2000 was over 500,000 squab worth $4,000,000 CAD at the wholesale level. The largest producers are believed to have 12,000 and 6,500 breeding pairs, respectively. Fresh and frozen whole squab are the primary products of the industry, with some trade in breeding pairs.

The original and largest game bird processor has been in business for 11 years, processing a range of game bird products. The addition of two additional processing plants with their added production and competition has eroded some profit margin from game bird products and increased output volume is necessary in order to maintain a similar level of profitability.

It appears that the local Chinese markets are being supplied direct by the processors and not through the specialty meat companies who handle many of the other game bird products. Most of the squab is going into the Chinese market with only a small amount going to French style restaurants, often through other exotic meat brokers.

A profile of the game bird industry in 1994[2] found the majority (85%) of squab going to restaurants and the balance (15%) moving through poultry retailers. This pattern appears to still be valid in 2001.

[2] Kermode, D and BC Ministry of Agriculture, Fisheries and Food. 1994. A commodity development strategy for the BC game bird industry.

In addition, European and North American type poultry wholesalers still sell primarily to European/North American type restaurants while Chinese wholesalers sell into Chinese and South East Asian ethnic markets.

BC produced squab is sold throughout Canada with only a small amount going to the US, into the California and Seattle markets. California sells more squab in BC than goes from BC to California as one of the largest Vancouver restaurants using squab is buying all their squab from a California firm. This restaurant firm is an offshoot of a couple of Hong Kong restaurants and now has locations in both Vancouver and Richmond.

The processors report that they have sufficient inventory to carry them for a considerable time and that there are more than enough birds right now to meet the market requirements. Overall the West Coast squab market is indicated to be growing steadily and continued growth looks very promising.

A market demand complication identified by one of the processors is the slight downturn in Asian markets due to an exodus of landed immigrants and visitors returning to Hong Kong to deal with business reversals there.

5.2.2 Ontario

Table 5-3 provides the Ontario slaughter statistics through provincially inspected plants for selected game birds for the year 2000. Although this does not include slaughter from federally inspected plants, the 116,000 squab counted in this table lend credibility to the total of 200,000 reported by the industry interviews. Squab slaughter is spread out relatively evenly throughout the year.

Table 5-3
Ontario Provincial Slaughter Statistics, 2000, by Month, Selected Game Birds.

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
Partridge	1,415	1,710	1,310	1,280	1,860	2,464	1,540	1,786	1,410	2,216	2,305	2,090	21,386
Pheasant	597	40	253	14	18	25	27	19	247	1,247	1,664	1,178	5,329
Pigeons	7,954	10,110	8,157	8,345	11,464	11,404	9,753	12,774	9,229	10,000	10,352	6,919	116,461
Quail	67,815	48,165	27,550	44,450	58,470	56,750	55,650	50,400	55,200	72,854	73,900	56,500	667,704

Source: Ontario Ministry of Agriculture, Food and Rural Affairs, Food Inspection Branch**.**

Discussions with Ontario producers indicate that in 1999 there were about 15 squab farmers and 11 processing plants in the province with three reported to be handling squab with all of the output aiming at the Toronto market. Squab production was about 3,000 birds per week in 1999 and is now (2001) about 4,000 birds per week, although the numbers of producers has dropped. Squab production in Ontario started 12 years ago with breeding stock imported from South Carolina and BC.

At present, everything that is being produced is being sold with almost all of it going into the Toronto Asian restaurant market. There is a small amount going to the white table cloth French restaurants but that market has not been aggressively pursued.. There are four wholesalers marketing 90% of the squab sold in the city.

BC product is also being sold into the Toronto market.

Pricing for squab from the distributor to the restaurant or retailer is on a per piece basis with smalls (10 to 12 oz.) running $4.00CAD to $5.00CAD each and larger birds (approximately one lb.) returning up to $8.50CAD each. Different restaurants buy different sizes depending on how they use them and most want to find a cheaper supplier and then call for price reductions from their original supplier. Although importation of poultry from China is presently not legal, very small squab, 6 oz. to 8 oz from China, are reported being offered to restaurants in Toronto at about $3.00CAD each.

Squab production protocols among producers may vary significantly. One Ontario producer has an innovative system that uses vacant greenhouses normally used in orchid production for squab rearing. The greenhouse environment is claimed to reduce prevalence of disease in squab and increase squab production per breeding pair..

Our investigation indicates that the Toronto squab market is anticipated to have growth potential from the current level of about 4,000 birds per week to 10,000 squab per week. The projection is based on the following rationale:

- There are about 7 million Chinese in Hong Kong consuming about 12 million squab annually, about 1.7 squab per person/year

- There are about 300,000 Asian-origin population in BC and production is about 500,000 birds, or 1.67 squab per person/year

- There are about 400,000 Asian-origin population in Ontario consuming about 200,000 birds or 0.5 squab per person/year. At 10,000 squab per week, the annual consumption would amount to about 1.3 squab per person/year.

5.2.3 Quebec

Table 5-4 indicates the Quebec slaughter of game birds in provincial plants for the years 1995 - 1999. The Quebec slaughter data on squab suggests a relatively static provincial industry with low levels of production. Demographic data confirm that only a small proportion of the Canadian Asian-origin population (less than 100,000 representing 10% of Canadian Asians) resides in Quebec (see Section 1, above).

Table 5-4
Quebec Provincial Slaughter of Selected Game Birds, 1995 -1999.

Quebec Game Bird Slaughter in Provincial Plants - Number of Head

	1995	1996	1997	1998	1999*
Quail	29,344	83,343	242,279	315,769	154,251
Pheasant	11,621	10,980	8,702	5,532	8406
Guinea Fowl	9,446	13,918	13,938	7,755	2984
Partridge	3,348	5,441	5,849	4,069	1,495
Pigeon	2,358	2,881	7,458	1,293	1,849
Total	56,117	116,563	278,226	334,418	168,985

* first ten months only

Source: Agriculture and Agri-Food Canada. CFIA

5.3 International Pigeon Industry

5.3.1 Global Pigeon Meat Production

The following data is Food and Agriculture Organization (FAO) data where "meat of pigeons" refers to "meat of pigeons and other birds not otherwise specified (in fresh, chilled and frozen state)". Pigeons and other birds includes partridge, pigeon, quail, turtle dove, pheasant, etc.
Tables 5-5 and 5-6 present global pigeon slaughter and global pigeon meat production statistics for the1991-2000 period, respectively[3]. Production is broken out by selected regions of the world. In 2000, pigeon meat production amounted to 17,200 MT, of which African production accounted for about 74% of the total, Asian 21% and European 4%. Global pigeon meat production has increased by about 25% between 1991 and 2000, or at a rate of about 2.5% per year.

Egypt represents over 99% of African pigeon meat production and has increased by 25% in the 1991-2000 period.

Asian pigeon meat production occurs predominantly in Syria (2,400 MT) and Saudi Arabia (1,000 MT). Asian production has been relatively static in the 1991-2000 period.

All European pigeon production is located in France. Pigeon meat production peaked in 1998 at 794 MT, and shows about a 23% increase in the 1991-2000 period.

Canadian and US pigeon production is not represented in FAO statistics.

5.3.2 Global Pigeon Meat Imports

[3] Note that the FAO definition of pigeon is not restricted to squab (see section 5.1.1, above).

As Table 5-7 indicates, Europe accounts for 84% of global pigeon meat importations while North America represents 13% of the trade. European countries imported approximately 3,800 MT of pigeon meat in 1999, followed by North America with 600 MT.

In Europe in 1999, the EU accounted for all of imports to the continent. France and Benelux were the predominant EU importers (1, 200 and 1,000 MT, respectively). Other significant EU importers of pigeon meat were the Netherlands and the UK. EU importations have increased steadily in the 1991-1999 period.

The US is responsible for all imports of pigeon meat to North America, which have increased by 145% in the 1991-2000 period.

Asian imports of pigeon meat have been sporadic through the period.

5.3.3 Global Live Pigeon Imports

About 91% of global live pigeon imports are destined for China through either Hong Kong, Macao or through mainland ports of entry. Europe accounted for about 4% of the live pigeon trade, amounting to about 250,000 birds landed in Belgium-Luxemburg. North America (i.e., the US) imported 205,000 pigeons in 1999. The number of live pigeon imports is shown to have declined markedly from the peak in 1996. The data are presented in Table 5-8.

5.3.4 Global Pigeon Meat Exports

World pigeon meat exports statistics for the 1991-1999 period are presented in Table 5-9. In 1999, Europe was the sole global exporter of note, exporting about 5,000 MT of pigeon meat. Asia has not exported pigeon meat since 1997

The EU accounts for all of European pigeon meat exports. In 1999, the major EU pigeon meat exporters were France (1,800 MT), Spain (1,200 MT) and the UK (1,200 MT). With the exception of the UK, levels of exports have increased over the 1991-1999 period.

The Czech Republic is the only non-EU European exporter of pigeon meat and amounts are exported are extremely small.

Until 1997, Saudi Arabia was a consistent exporter of pigeon meat out of Asia.

5.3.5 Global Live Pigeon Exports

Table 5-10 presents data on global live pigeon exports. The data indicate that global exports have tapered off sharply in the1991-1999 period and is problematic in view of the higher level of global imports. China is shown to have participated strongly in both the importation and exportation of live pigeon in 1996, thereafter becoming a minor player. European exportation of live pigeon has also

declined sharply in the 1991-1999 period.

5.3.6 Australia[4]

- permits are required for producing and processing squab are specific to each state and there are few producers
- there are no organized marketing outlets, with destructive price competition from "back yard" operators
- the industry is considered mature and in a state of decline due to shrinking domestic market
- although there is a well established industry in Asia (e.g.., Hong Kong, Singapore), it is not worth developing an export market for squab as the returns were insufficient to cover the additional freight costs
- processors purchase birds from producers at $3AUD - $5AUD each with the squab processed as a whole bird, frozen immediately and sold within 24 hours
- birds are sold to restaurants and specialty stores at $5AUD and upwards depending on size and quality
- squab is perceived as a relatively expensive game bird due to high wastage in the form of bones and considered somewhat "old-fashioned"
- big birds are not economic to produce but are desired by Asian restaurants
- squab is likely to remain a small specialist industry with limited potential for growth in competition with other poultry and game meats
- In 1995, new regulations in the poultry slaughtering have forced meat processing operators to upgrade facilities. This additional cost is affecting smaller operators, as in the squab industry

5.3.7 United States

The USA industry is dominated by two major processors representing production from over 60 farms.

The largest single squab farm in the US is located in Sumter, South Carolina and has been in production for over 80 years. This farm currently has about 20,000 breeding pairs and have had a similar number for quite a few years. Rather than increase its own output, the farm has formed alliances with 5 other local farms, to which the company supplies the breeding stock and production consulting. The farms are required to sell their product to the Sumter operation which also owes a processing plant. Through this arrangement they have increased their output from about 3,500 squab per week to over 10,000 per week.

The South Carolina firm sells primarily throughout the US with about 25% going to white table cloth restaurants and the balance (75%) going into the Asian market. Its largest market is in New York where the product retails in grocery stores at $6USD to $7USD per bird and is priced in restaurants

[4] McKinna, D. et al Pty. Ltd., 1999. Marketing of new animal products. A report prepared for the Rural Industries Research and Development Corporation, Australia. RIRDC Pub. No. 99/53. April.

in the $25USD range. Squab has been growing in popularity in the past few years.

The firm has recently expanded their operation to meet demand for quail and silkies in small, but growing, markets.

The largest squab processor in the US is located in Modesto, California and has about 60 growers supplying their operation. They market about 30% of their squab to white table cloth restaurants, mainly in California, and the balance into domestic Asian and export markets throughout the world, including BC. The firm has also been involved in processing of silkies and quail.

This California firm is concerned that the present Canada/US exchange rate is creating an unfair advantage allowing Canadian producers to push product into the LA and San Francisco markets at very low prices. Squab does not appear to be a major problem yet but even for that bird type the competition is much greater than it was 3 years ago.

Squab, as is other game and specialty meats, is offered for sale in a number of locations on the Internet. Prices vary widely and reflect direct-to-consumer sales rather than wholesale pricing. A Seattle firm offers California squab at $10.25USD per bird while a Denver firm offers two squab at $35.00USD. Other internet offerings are at $14.95USD each and $9.25USD per lb. All of these prices do not include shipping and handling which can range as high as $30USD for the first three pounds.

5.4 Conclusions

The demand for and supply of squab in North America has increased over the past years due to:

- increases in Asian population.
- increases in per capita consumption within the Asian community throughout Canada.

The opportunity to increase marketing into the United States has arisen primarily because to the rising exchange rate differential between the US and Canadian dollar. In addition, growth in squab demand is expected to continue as North American Asian markets, such as Toronto, are more completely serviced..

5.5 Recommendations for Investigations by the Avian Research Centre

- Identification of blood lines and hybridization opportunities for the growers.
- Investigation of breeding success, chick mortality and disease control
- Robotic feeding of young squab to increase production per breeding pair.

Table 5-5

Global Pigeon Slaughter, by Selected Geographical Region, 1991 - 2000, 000's of Head.

Geographical Region	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Egypt	33,750	34,700	35,700	35,750	37,375	39,000	40,000	41,000	42,250	42,500
Namibia	650	1,380	1,520	2,320	2,120	3,890	4,670	5,240	3,310	3,200
Rest of Africa	0	0	0	0	0	0	0	0	0	0
Saudi Arabia	3,333	5,833	8,333	8,333	8,333	8,333	8,333	8,333	8,333	8,333
Syria	4,800	4,850	5,500	5,400	4,900	5,600	5,800	5,900	6,000	6,050
Cyprus	4,420	3,950	2,860	2,430	2,370	2,220	1,200	1,100	1,100	1,100
Myanmar	200	200	200	200	200	180	180	185	185	185
Rest of Asia	n/a	0	0	0	0	0	0	0	0	0
France	3,000	3,000	3,600	3,420	3,796	3,936	3,970	4,655	3,510	3,700
Rest of European Union (15)	n/a	0	0	0	0	0	0	0	0	0
Rest of Europe	0	0	0	0	0	0	0	0	0	0
Europe	3,000	3,000	3,600	3,420	3,796	3,936	3,970	4,655	3,510	3,700
European Union (15)	3,000	3,000	3,600	3,420	3,796	3,936	3,970	4,655	3,510	3,700
Africa	34,400	36,080	37,220	38,070	39,495	42,890	44,670	46,240	45,560	45,700
Asia	n/a	14,833	16,893	16,363	15,803	16,333	15,513	15,518	15,618	15,668
Central America & Caribbean	0	0	0	0	0	0	0	0	0	0
North America exclud. Mexico	0	0	0	0	0	0	0	0	0	0
South America	0	0	0	0	0	0	0	0	0	0
Oceania	0	0	0	0	0	0	0	0	0	0
World	50,153	53,913	57,713	57,853	59,094	63,159	64,153	66,413	64,688	65068

Source: Food and Agriculture Organization. Http://apps.fao.org/page/collections?subset=agriculture

Table 5-6
Global Meat Production, by Selected Geographical Region, 1991-2000, Metric Tons.

Geographical Region	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Egypt	10,125	10,410	10,710	10,725	11,212	11,700	12,000	12,300	12,675	12,750
Rest of Africa	13	28	30	46	43	78	93	105	66	64
Saudi Arabia	400	700	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Syria	1,920	1,940	2,200	2,160	1,960	2,240	2,320	2,360	2,400	2,420
Cyprus	650	625	460	405	395	370	200	180	180	180
Rest of Asia	n/a	30	30	30	30	27	27	28	28	28
France	n/a	600	720	684	759	787	794	931	702	740
Rest of European Union (15)	n/a	0	0	0	0	0	0	0	0	0
Rest of Europe	0	0	0	0	0	0	0	0	0	0
Europe	600	600	720	684	759	787	794	931	702	740
European Union (15)	600	600	720	684	759	787	794	931	702	740
Africa	10,138	10,438	10,740	10,771	11,255	11,778	12,093	12,405	12,741	12,814
Asia	n/a	3,295	3,690	3,595	3,385	3,637	3,547	3,568	3,608	3,628
Central America & Caribbean	0	0	0	0	0	0	0	0	0	0
North America exclud. Mexico	0	0	0	0	0	0	0	0	0	0
South America	0	0	0	0	0	0	0	0	0	0
Oceania	0	0	0	0	0	0	0	0	0	0
World	13,738	14,333	15,150	15,050	15,399	16,202	16,434	16,904	17,051	17,182

Source: Food and Agriculture Organization. Http://apps.fao.org/page/collections?subset=agriculture

Table 5-7
Pigeon Meat Imports, by Selected Geographical Region, 1991-1999, Metric Tons.

Geographical Region	1991	1992	1993	1994	1995	1996	1997	1998	1999
Philippines	0	5	1	1	7	30	122	0	94
Saudi Arabia	43	81	0	0	72	0	70	0	0
China	0	0	0	0	0	362	0	0	0
Rest of Asia	0	0	0	0	0	0	0	0	0
UK	12	11	40	75	73	79	61	75	364
Ireland	1	1	3	3	7	18	18	21	32
Germany	78	82	356	332	469	465	472	474	481
Netherlands	28	14	289	552	81	124	59	94	160
Portugal	0	0	27	40	25	65	286	257	117
Spain	32	28	70	38	34	34	28	29	30
Belgium-Lux	61	93	1,018	1,265	1,093	1,243	1,281	1,188	1,101
France	14	37	469	630	772	966	982	1,085	1,244
Denmark	2	1	45	34	93	122	99	69	74
Sweden	0	0	0	0	12	7	10	9	12
Finland	0	0	0	0	3	3	4	2	22
Greece	0	0	8	32	57	80	32	40	21
Italy	83	72	228	170	270	165	89	78	44
Austria	0	0	0	0	24	29	28	46	95
Rest of European Union (15)	0	0	0	0	0	0	0	0	0
Rest of Europe	0	0	0	0	0	0	0	0	1
French Polynesia	0	0	1	1	1	10	10	10	10
Rest of Oceania	0	0	0	0	0	0	0	0	0
US	247	266	331	321	407	481	540	523	606
Rest of North America exclud. Mexico	0	0	0	0	0	0	0	0	0
Europe	311	339	2,553	3,171	3,013	3,400	3,449	3,467	3,798
European Union (15)	311	339	2,553	3,171	3,013	3,400	3,449	3,467	3,797
Asia	43	86	1	1	79	392	192	0	94
Africa	0	0	7	9	6	0	0	0	0
North America exclud. Mexico	247	266	331	321	407	481	540	523	606
Oceania	0	0	1	1	1	10	10	10	10
Central America & Caribbean	0	0	59	56	52	0	0	0	0
South America	0	0	3	11	5	0	0	0	0
World	601	691	2,955	3,570	3,563	4,283	4,191	4,000	4,508

Source: Food and Agriculture Organization. Http://apps.fao.org/page/collections?subset=agriculture

Table 5-8
Pigeon Imports by Selected Geographical Region, 1991-1999, 000's, Live Birds.

Geographical Region	1991	1992	1993	1994	1995	1996	1997	1998	1999
China (Hong Kong SAR)	4,611	5,712	4,998	7,206	7,629	8,247	7,939	2,711	3,437
China (Macao SAR)	1,486	1,548	2,721	1,765	1,685	1,580	1,755	1,487	1,700
China	18	68	41	53	36	19,553	37	28	76
Pakistan	0	2	0	0	0	0	0	0	68
Rest of Asia	3	0	15	0	2	6	0	0	0
US									
Rest of North America exclud. Mexico	247	266	331	321	407	481	540	523	606
UK	7	3	0	0	0	0	3	0	0
Germany	10	13	0	0	0	0	0	0	0
Netherlands	7	3	0	0	0	3	3	7	0
Portugal	63	47	0	0	0	3	1	3	0
Spain	39	10	6	1	0	2	90	23	0
Belgium-Lux	607	623	253	287	350	307	287	320	247
France	10	10	7	10	3	3	7	3	0
Italy	287	267	213	7	0	0	3	0	3
Rest of European Union (15)	0	0	0	0	2	0	0	0	0
Rest of Europe	0	0	0	0	0	0	0	0	0
US	280	314	268	121	134	122	144	165	205
Rest of North America exclud. Mexico	0	0	0	0	0	0	0	0	0
Europe	1,030	976	479	305	355	318	394	356	250
European Union (15)	1,030	976	479	305	355	318	394	356	250
Asia	6,118	7,330	7,775	9,024	9,352	29,386	9,731	4,226	5,281
Africa	0	1	0	0	0	0	0	0	0
North America exclud. Mexico	280	314	268	121	134	122	144	165	205
Oceania	0	0	0	0	0	0	0	0	0
Central America & Caribbean	0	0	0	0	0	0	0	0	0
South America	0	0	0	0	0	0	0	0	0
World	7,428	8,621	8,522	9,450	9,841	29,826	10,269	4,747	5,736

Source: Food and Agriculture Organization. Http://apps.fao.org/page/collections?subset=agriculture

Table 5-9
Pigeon Meat Exports, by Selected Geographical Region, 1991-1999, Metric Tons.

Geographical Region	1991	1992	1993	1994	1995	1996	1997	1998	1999
Saudi Arabia	219	94	170	230	280	280	340	0	0
China	0	1,195	0	0	0	7,327	0	0	0
Philippines	20	1	1	0	1	0	0	0	0
Rest of Asia	0	0	0	0	0	0	0	0	0
France	171	162	1,071	906	998	1,361	1,640	1,833	1,755
Spain	0	0	278	433	968	806	686	903	1,247
UK	145	194	465	1,676	968	806	784	842	1,243
Italy	24	54	234	200	155	359	352	274	300
Netherlands	3	4	345	252	16	25	44	126	120
Belgium-Lux	1	1	1,704	457	76	170	173	238	289
Portugal	0	0	0	25	103	5	7	5	8
Germany	5	1	106	3	5	9	6	2	4
Sweden	0	0	0	0	25	28	2	0	4
Rest of European Union (15)	0	0	0	0	1	0	3	8	11
Czech Republic	n/a	n/a	0	0	0	0	2	4	2
Rest of Europe	0	0	0	0	0	0	0	0	0
Europe	349	416	4,203	3,952	3,315	3,569	3,699	4,235	4,983
European Union (15)	349	416	4,203	3,952	3,315	3,569	3,697	4,231	4,981
Asia	239	1,290	171	230	281	7,607	340	0	0
Africa	0	0	0	0	0	0	0	0	0
Oceania	0	0	0	0	0	0	0	0	0
Central America & Caribbean	0	0	0	0	0	0	0	0	0
North America exclud. Mexico	0	0	0	0	0	0	0	0	0
South America	0	0	0	0	0	0	0	0	0
World	588	1,706	4,374	4,182	3,596	11,176	4,039	4,235	4,983

Source: Food and Agriculture Organization. Http://apps.fao.org/page/collections?subset=agriculture

Table 5-10
Pigeon Exports by Selected Geographical Region, 1991-1999, 000's, Live Birds.

Geographical Region	1991	1992	1993	1994	1995	1996	1997	1998	1999
China	3,884	3,401	2	1	2	9,811	7	10	5
Indonesia	3	1	0	0	5	0	0	37	8
Philippines	1	1	7	2	1	2	2	1	5
Saudi Arabia	8	55	34	0	0	0	0	0	0
China (Hong Kong SAR)	30	52	45	12	0	0	0	0	0
Rest of Asia	0	0	0	0	0	0	0	0	0
France	33	10	57	3	3	3	7	17	93
Spain	64	21	33	17	18	8	13	53	57
UK	0	0	7	13	0	0	0	0	0
Italy	7	0	7	0	0	3	3	13	13
Netherlands	663	667	623	1,127	180	10	17	7	27
Belgium-Lux	93	53	37	30	17	23	33	37	33
Portugal	0	7	0	0	0	0	0	0	0
Germany	13	7	20	3	2	0	3	0	0
Ireland	77	30	0	0	0	0	0	0	0
Rest of European Union (15)	7	0	0	0	0	0	0	0	0
Yugoslavia	170	65	0	0	0	4	29	9	9
Rest of Europe	0	0	0	0	0	0	0	0	2
Europe	1,127	860	784	1,193	220	51	105	136	234
European Union (15)	957	795	784	1,193	220	47	76	127	223
Asia	3,926	3,510	88	15	8	9,813	9	48	18
Africa	0	0	0	0	1	0	1	1	3
Oceania	0	0	0	0	0	0	0	0	0
Central America & Caribbean	0	0	0	0	0	0	0	0	0
North America exclud. Mexico	0	0	0	0	0	0	0	0	0
South America	0	0	0	0	0	0	0	0	0
World	5,053	4,370	872	1,208	229	9,864	115	185	255

Source: Food and Agriculture Organization. Http://apps.fao.org/page/collections?subset=agriculture

6.0 SILKIE CHICKENS

Silkies are an ancient Chinese breed of bantam chickens having very fine fluffy feathers and a black or blue skin and meat. They are used by Chinese, predominately from Mainland China, for their meat and are considered medicinal. They dress out at about 0.74 kg. Silkies fall within the Gallus genus, which has implications for their marketing in Canada.

6.1 Sector Summary

6.1.1 Global Production and Trends

The level of global production of silkies is not known as they are not differentiated from other chickens in the data.. In North America, the primary consumers of these bantam chickens are the Chinese origin population. North American production is primarily in California, South Carolina, and British Columbia. The major markets for silkies are in cities with larger Chinese populations, such as New York and Los Angeles in the US and Vancouver and Toronto in Canada.

6.1.2 Demand, Market and Distribution Trends

The demand for silkies is growing due to increases in numbers of Chinese in the North American markets and as existing markets are further penetrated with lower priced product. Product distribution is primarily through distributors serving the Chinese-origin retail trade.

6.1.3 Marketing Issues

Concern exists regarding the displacement of US production in California by BC product. Silkie production on the US East Coast is growing to fill markets there. The incentive for BC producers to take advantage of current market opportunities is tempered by the requirement for producers to purchase production quotas under the poultry supply management scheme in order to legally grow silkies.

6.1.4 Industry Structure Issues

The only real structural issue for BC silkie production, processing and marketing revolves around the production controls within the industry and the possibility that producers might benefit from organizing in order to deal with government and the BC Chicken Marketing Board.

6.1.5 Industry Challenges

The challenges include continuing to produce the product in the most economical methods possible and reacting to the potential expansion of the markets while production controls are in place.

6.1.6 Industry Needs

The industry needs a production control policy that will allow it to expand to meet export demand as well as increased markets within Canada.

6.1.7 Recommendations

The industry should organize themselves in order to:

- deal with the BC Chicken Marketing Board with one voice
- assist in developing production control policies that will allow the potential of the markets to be realized.

6.2 Canadian Situation

Table 6-1 presents data on the total game bird slaughter for Canada for the years 1990 to 2000. Tracking silkie production and slaughter is problematic, since the provinces do not report the bird separately within the game bird tallies. In other situations, may also be possible that silkies are being reported with conventional domestic chickens.

No information has been found on the production of silkies in other Canadian provinces.

Table 6-1
Canada Game Bird Slaughter, 1990 - 2000, 000's of Birds.

Year	000's head
1990	6,857
1991	6,217
1992	7,420
1993	10,461
1994	7,741
1995	8,184
1996	9,081
1997	9,195
1998	9,336
1999	9,514
2000	10,581

Source: Agriculture and Agri-Food Canada. CFIA Inspected Establishments.

Table 6-2
Canada Game Bird Trade, 1990 - 2000, Kilograms.

Year	Imports	Exports	Net Exports
1990	210,183	260,322	50,139
1991	235,062	326,779	91,717
1992	164,837	277,168	112,331
1993	112,339	362,468	250,129
1994	105,954	341,690	235,736
1995	90,211	492,608	402,397
1996	111,953	517,718	405,765
1997	93,975	419,790	325,815
1998	78,374	617,499	539,125
1999	53,336	194,274	140,938
2000		487,107	

Source: Agriculture and Agri-Food Canada. CFIA Meat Inspection Certificates

It is uncertain whether silkies are classified as game birds as they go through the processing plant or as chickens, as they do belong to the Gallus genus.

6.2.1 British Columbia

There are four main producers of silkies in BC and several others that produce from time to time. Production comes under control of the BC Chicken Marketing Board (BCCMB) and license to produce is regulated under a quota system. The BCCMB has implemented their quota system where current silkie production is handled under permit for a 12 year period after which it will be converted to quota. The BCCMB has approximately 300,000 kg of silkie permit per cycle with three cycles per year.

In 2001, BC silkie production is in the order of 1,100,000 birds per year with about 70% destined for the California market. There are three primary processors of silkies within BC with reported latent demand for more silkie production than is currently being produced in BC.

Expansion of the industry is inhibited to some extent by the requirement to purchase quota or apply for permit from the BCCMB to increase production. BCCMB regulations allow new producers to apply for permit up to 500 birds per week (26,000 per year) but existing producers are limited to their current permitted amounts without purchasing additional production quota. In the absence of perceived benefits from doing do, some producers feel that the quota increases the cost of business prohibitively while doing little to improve the markets or prices received for production. Existing producers were grand-fathered into the quota scheme with permits when the system was set up, but only for their production at that time.

The demand for silkies is driven by the Chinese-origin component of the population. One processor

stated that of all of the poultry types, silkies is the most active and strongest market at this time. However, the demographic of the population segment consuming the product is very narrowly based and attempts to sell silkies to European and North American hotels and restaurants have been discontinued due to absence of demand.

The product is worth about $4.00CAD to $4.25CAD per lb. in the Los Angeles market. Silkies were advertised recently in Victoria at $2.98CAD/lb., the first time the product has been advertised through a local grocery store chain.

6.3 International Silkie Industry

Production

No information has been found on world silkies production.

Trade

There appears to be little international movement of silkies other than between the US and Canada, primarily on the West Coast.

In an attempt to determine the level of trade in silkies between BC and the western US, the US poultry import and export databases were examined in detail. Under the harmonized HS code in place between Canada and the US, there are 13 poultry meat and 7 live poultry categories used to track trade between the two countries.

Since silkies are of Gallus genus, the HS code 0105.9200.00 (chickens >185g-2000g) is most likely to record imports of live silkies into the US from BC. The statistics presented below are for Canada and Seattle port of entry as it is expected that all live birds from BC would have been transported by ground and entered through Seattle.

Summary Table A
US Imports of Live Chickens from Canada, HS Code 0105.9200.00 - Greater Than 185 g. and Under 200 g., 1996-2000

Year	Canada		Seattle Port of Entry	
	# of Head	Value ($USD)	# of Head	Value ($USD)
1996	128,000	380,000	64,000	176,000
1997	144,000	334,000	108,000	300,000
1998	158,000	390,000	115,000	315,000
1999	114,000	309,000	89,000	246,000
2000	10,000	25,000	10,000	25,000

As Summary Table A indicates, Seattle received the bulk of live poultry of this Code entering the US, although the annual value of shipments was small. The residual amounts, when Seattle is subtracted

out of the values for Canada, entered the US at Pembina, ND until dropping off in 2000. Custom values per head range from $2.74USD to $2.78USD in the period.

Detailed information is presented in Tables 6-3 to 6-5.

Of the 13 categories of US poultry meat imports, HS Codes 0207.1100.40 (Chicken NESOI- Not cut in pieces, fresh or chilled) and 0207.1200.40 (Chickens NESOI- Not cut in pieces, frozen) are most likely to represent categories in which silkies imports might be entered. These categories may also include some squab exports but the industry assures us that those shipments have been minimal.

Summary Table B
US Imports of Chicken NESOI- Not Cut in Pieces, Fresh or Chilled, HS Code 0207.1100.40, 1996-2000.

Year	Canada		Seattle Port of Entry	
	'000 Kg.	**Value ($USD)**	**'000 Kg.**	**Value ($USD)**
1996	21	57,000	0	0
1997	43	101,000	0	0
1998	168	363,000	0	0
1999	981	2,179,000	0	0
2000	884	2,031,000	82	252,000
Jan-Jul 2001	779	1,863,000	122	335,000

As Summary Table B indicates, Seattle received on a small portion of fresh or chilled meat of this Code entering the US. The first shipments through Seattle occur in 2000 and 2001. Custom values per kilogram range from $2.16USD to $2.71USD in the period, compared to $1.80USD to $2.38USD per kilogram for a category representing broilers, fryers, roasters and capons (see more detailed Tables 6-6 to 6-9).

Summary Table C
US Imports of Chicken NESOI - Not Cut in Pieces, Frozen, HS Code 0207.1200.40, 1996-2000.

Year	Canada		Seattle Port of Entry	
	'000 Kg.	**Value ($USD)**	**'000 Kg.**	**Value ($USD)**
1996	70	332,000	59	322,000
1997	135	559,000	98	546,000
1998	175	843,000	175	843,000
1999	186	797,000	172	764,000
2000	238	885,000	216	866,000
Jan-Jul 2001	262	1,028,000	240	977,000

As Summary Table C indicates, Seattle was the port of entry for most of the frozen chicken NESOI entering the US. The shipments through Seattle represent approximately 90% of the total shipments from Canada in this HS code. Custom values per kilogram range from $3.72USD to $4.82USD in the period, compared to $1.64USD to $2.22USD per kilogram for products in a category representing frozen whole broilers, fryers, roasters and capons (see more detailed Tables 6-10 to 6-12). Note that 2001 imports from Canada are already the highest in the historical period even though 2001 only covers 7 months.

The other flow that we attempted to track is the movement of processed silkie and squab out of the US into BC. The revised HS system was only instituted since 1996 so essentially the reliable statistical time line is 5 years. West Coast exports refers to US exports cleared through West Coast ports. If silkie is referred to simply as chicken, we cannot identify them in the statistics. However, other possibilities are that silkies may be included in HS codes 0207.1100.40 (chickens NESOI, not cut in pieces, fresh or chilled) or 0207.1200.40 (chickens NESOI, not cut in pieces, frozen).

Summary Table D
US West Coast Exports to West Coast of Canada, Chicken NESOI- Not Cut in Pieces, Fresh or Chilled, HS Code 0207.1100.40 and Chicken NESOI- Not Cut in Pieces, Frozen, HS Code 0207.1200.40, 1996-2000.

Year	HS Code 0207.1100.40		HS Code 0207.1200.40	
	'000 Kg.	**Value ($USD)**	**'000 Kg.**	**Value ($USD)**
1996	0	0	114	172,000
1997	0	0	73	112,000
1998	0	0	265	384,000
1999	0	0	7	9,000
2000	883	584,000	74	89,000
Jan-Jul 2001	481	290,000	9	13,000

As Summary Table D indicates, small amounts of products in the two HS poultry meat codes are exported to the Canadian West Coast from the Seattle Port of Exit. It should be noted that custom

values per kilogram for frozen whole chicken NESOI appear extremely low, ranging from $1.20USD to $1.58USD in the period. There are no exports of frozen whole conventional chicken for comparison (see more detailed Tables 6-13 to 6-14).

6.3.1 United States

The primary processor for silkies in the California market is also the largest US squab producer. Up until two years ago one BC producer was sending 10,000 live silkies per month to this California firm for slaughter and marketing. Since then all of this BC production has been processed within the province although the product is still going to California.

This situation is creating problems for the California firm as not only are they not processing the BC birds but they say that silkies are coming into the California markets at prices below their producers' cost of production. They maintain that the market is not growing much for this product and that most of the Canadian growth is being made at the California producers' loss of market share.

California also contends that BC is shipping gray chickens (silkie/broiler hybrids) to California and undercutting the market this way. The BC producers interviewed say that they have heard of such product but that they aren't producing them because their market doesn't want them.

Another larger US squab producer, located in South Carolina, has begun producing silkies in the past couple of years with their production primarily going into the New York market.

With quota controls on BC production, the main beneficiaries may well be the US producers. As markets expand due to increasing ethnic populations, BC producers may not be able to take advantage of those markets, making room for US production once again. The Americans have been pushed out of the California markets to a considerable extent because the BC product is available at more competitive prices due to more efficient growing methods and the favourable US-Canada exchange rate.

6.4 Conclusions

The production and marketing of BC silkies has increased rapidly over the past few years due to increases in Asian population and development of major markets in the US, primarily California. There appear to be further opportunities for market penetration both in eastern Canada and elsewhere in the US, according to industry sources. A major challenge will be whether the controls of the BC Chicken Marketing Board will allow this to happen in an economical manner.

6.5 Recommendations for Investigations by the Avian Research Centre

- undertake some strain work on silkies to see if production can be improved, both in numbers and size, through hybridization and cross breeding.

Table 6-3
Live Imports to US, Number of Head, Annual, 1991-2000.

	HS Code	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
							000 Head				
Chickens, except breeding stock, <186g	0105.1100.40	676	406	403	474	362	737	1,183	1,129	815	1,315
Ducks, geese and guinea fowl, <186g	0105.1900.00	n/a	n/a	n/a	n/a	n/a	479	668	632	454	396
Ducks, geese and guinea fowl, <186g	0105.1900.40	95	175	434	450	303	n/a	n/a	n/a	n/a	n/a
Chickens, >185g	0105.9100.00	4	15	24	21	206	n/a	n/a	n/a	n/a	n/a
Chickens, 185g - <2000g	0105.9200.00	n/a	n/a	n/a	n/a	n/a	128	144	158	114	10
Chickens, >2000g	0105.9300.00	n/a	n/a	n/a	n/a	n/a	23	22	104	7	0
Turkeys, ducks, geese and guinea fowl >185g	0105.9900.00	15	19	73	126	615	804	663	512	337	476
HS Code	Point of Entry										
0105.1100.40	Seattle	20	0	0	61	3	0	50	118	74	486
0105.1900.00	Seattle	n/a	n/a	n/a	n/a	n/a	0	0	0	0	0
0105.1900.40	Seattle	0	0	0	0	0	n/a	n/a	n/a	n/a	n/a
0105.9100.00	Seattle	0	0	0	0	145	n/a	n/a	n/a	n/a	n/a
0105.9200.00	Seattle	n/a	n/a	n/a	n/a	n/a	64	108	115	89	10
0105.9300.00	Seattle	n/a	n/a	n/a	n/a	n/a	0	0	0	0	0
0105.9900.00	Seattle	0	0	0	0	0	0	1	0	0	0

Source: US International Trade Commission. Http://dataweb.usitc.gov/scripts

Table 6-4
Live Imports to US, Value, $000's USD, Annual, 1991-2000.

	HS Code	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
						$000 USD					
Chickens, except breeding stock, <186g	0105.1100.40	355	266	313	479	454	1,026	2,198	1,743	1,095	1283
Ducks, geese and guinea fowl, <186g	0105.1900.00	n/a	n/a	n/a	n/a	n/a	474	505	462	244	206
Ducks, geese and guinea fowl, <186g	0105.1900.40	124	168	337	335	306	n/a	n/a	n/a	n/a	n/a
Chickens, >185g	0105.9100.00	44	72	68	66	514	n/a	n/a	n/a	n/a	n/a
Chickens, 185g - <2000g	0105.9200.00	n/a	n/a	n/a	n/a	n/a	380	334	390	309	25
Chickens, >2000g	0105.9300.00	n/a	n/a	n/a	n/a	n/a	90	65	184	5	0
Turkeys, ducks, geese and guinea fowl >185g	0105.9900.00	122	176	523	1,172	5,661	4,446	3,861	2,381	2,865	3,831
HS Code	Point of Entry										
0105.1100.40	Seattle	11	0	0	21	2	0	31	70	78	602
0105.1900.00	Seattle	n/a	n/a	n/a	n/a	n/a	4	4	12	0	0
0105.1900.40	Seattle	0	0	0	2	2	n/a	n/a	n/a	n/a	n/a
0105.9100.00	Seattle	0	1	0	0	308	n/a	n/a	n/a	n/a	n/a
0105.9200.00	Seattle	n/a	n/a	n/a	n/a	n/a	176	300	315	246	25
0105.9300.00	Seattle	n/a	n/a	n/a	n/a	n/a	0	0	0	0	0
0105.9900.00	Seattle	2	0	5	0	0	0	6	0	0	0

Source: US International Trade Commission. Http://dataweb.usitc.gov/scripts

Table 6-5
Live Imports to USA, Value, $USD per Head, Annual, 1991-2000.

	HS Code	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
						$000 USD					
Chickens, except breeding stock, <186g	0105.1100.40	0.53	0.66	0.78	1.01	1.25	1.39	1.86	1.54	1.34	0.98
Ducks, geese and guinea fowl, <186g	0105.1900.00	n/a	n/a	n/a	n/a	n/a	0.99	0.76	0.73	0.54	0.52
Ducks, geese and guinea fowl, <186g	0105.1900.40	1.31	0.96	0.78	0.74	1.01	n/a	n/a	n/a	n/a	n/a
Chickens, >185g	0105.9100.00	11.00	4.80	2.83	3.14	2.50	n/a	n/a	n/a	n/a	n/a
Chickens, 185g - <2000g	0105.9200.00	n/a	n/a	n/a	n/a	n/a	2.97	2.32	2.47	2.71	2.50
Chickens, >2000g	0105.9300.00	n/a	n/a	n/a	n/a	n/a	3.91	2.95	1.77	0.71	0.00
Turkeys, ducks, geese and guinea fowl >185g	0105.9900.00	8.13	9.26	7.16	9.30	9.20	5.53	5.82	4.65	8.50	8.05
HS Code	Point of Entry										
0105.1100.40	Seattle	0.55	0.00	0.00	0.34	0.67	0.00	0.62	0.59	1.05	1.24
0105.1900.00	Seattle	n/a	n/a	n/a	n/a	n/a	0.00	0.00	0.00	0.00	0.00
0105.1900.40	Seattle	0.00	0.00	0.00	0.00	0.00	n/a	n/a	n/a	n/a	n/a
0105.9100.00	Seattle	0.00	0.00	0.00	0.00	2.12	n/a	n/a	n/a	n/a	n/a
0105.9200.00	Seattle	n/a	n/a	n/a	n/a	n/a	2.75	2.78	2.74	2.76	2.50
0105.9300.00	Seattle	n/a	n/a	n/a	n/a	n/a	0.00	0.00	0.00	0.00	0.00
0105.9900.00	Seattle	0.00	0.00	0.00	0.00	0.00	0.00	6.00	0.00	0.00	0.00

Source: US International Trade Commission. Http://dataweb.usitc.gov/scripts

Table 6-6
Poultry Meat Imports to West Coast US, 000 Kg, 1991-2001.

US West Coast Imports		1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
						000 kg						Jan-Jul
HS Code 0207												
110020 and104020	Young chickens (broilers, fryers, roasters and capons) Not cut in pieces, fresh or chilled	0	0	0	0	0	19	71	96	105	374	882
110040 and104040	Chickens NESOI Not cut in pieces, fresh or chilled	0	0	0	0	0	0	0	0	0	82	122
120020 and 210020	Young chickens (broilers, fryers, roasters and capons) Not cut in pieces, frozen	0	0	0	6	1	0	0	20	31	21	1
120040 and 210040	Chickens NESOI Not cut in pieces, frozen	4	4	0	2	48	59	98	175	172	216	240
130000 and 390020	Chicken cuts and edible offal (including livers) Fresh or chilled	0	110	33	138	93	169	217	657	2540	2019	360
140020	Chicken livers Frozen	0	0	0	0	0	0	0	0	0	8	0
140040 and 410000	Chicken cuts and edible offal (except livers) Frozen	218	184	84	98	30	65	214	204	258	317	270
320000 and 104060	Ducks, geese and guineas Not cut in pieces, fresh or chilled	0	0	0	0	1	1	42	43	23	39	22
330000 and 230000	Ducks, geese and guineas Not cut in pieces, frozen	0	0	0	26	5	15	14	37	6	1	42
340000 and 310000	Fatty livers of ducks, geese and guineas Edible, fresh or chilled	0	0	0	0	0	0	0	0	0	0	0
7350000 and 390060	Ducks, geese and guineas Cuts and edible offal, fresh or chilled	0	1	2	1	1	0	0	0	0	0	0
360020 and 500000	Poultry livers Frozen	0	0	0	0	0	0	0	0	0	0	0
360040 and 500000	Duck,geese or guinea Cuts and edible offal (except livers), frozen	0	0	0	0	2	0	1	13	0	0	0
HS Code 0208												
903000	Quail eviscerated Not in pieces, fresh chilled or frozen	4	12	6	14	39	75	104	90	91	135	117
HS Code 0210												
902000	Meat of poultry heading 0105 and edible meat offal	4	4	8	8	4	0	0	0	0	0	11

Source: US International Trade Commission. Http://dataweb.usitc.gov/scripts

Table 6-7
Poultry Meat Imports to US West Coast from Canada, 000 kg, 1991-2000.

US West Coast Poultry Meat Imports from Canada

HS Code		1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
						000 kg						Jan-Jul
0207110020 and 0207104020	Young chickens (broilers, fryers, roasters and capons) Not cut in pieces, fresh or chilled	9	19	2	10	9	851	1178	1273	920	1357	1526
0207110040 and 0207104040	Chickens NESOI Not cut in pieces, fresh or chilled	15	3	5	14	1206	21	43	168	981	884	779
0207120020 and 0207210020	Young chickens (broilers, fryers, roasters and capons) Not cut in pieces, frozen	2	6	0	6	1	0	0	80	34	37	18
0207120040 and 0207210040	Chickens NESOI Not cut in pieces, frozen	12	5	0	3	68	70	135	175	186	238	262
0207130000 and 0207390020	Chicken cuts and edible offal (including livers) Fresh or chilled	93	244	53	275	174	348	896	1485	3509	3287	1682
0207140020	Chicken livers Frozen						38	8	55	8	10	9
0207140040 and 0207410000	Chicken cuts and edible offal (except livers) Frozen	1033	289	197	224	367	700	504	801	604	1143	1176
0207320000 and 0207104060	Ducks, geese and guineas Not cut in pieces, fresh or chilled	61	40	10	52	84	66	138	101	82	98	59
0207330000 and 0207230000	Ducks, geese and guineas Not cut in pieces, frozen	322	376	473	516	493	656	600	790	988	1149	582
0207340000 and 0207310000	Fatty livers of ducks, geese and guineas Edible, fresh or chilled	0	0	0	11	55	12	13	28	43	34	16
0207350000 and 0207390060	Ducks, geese and guineas Cuts and edible offal, fresh or chilled	23	6	2	8	31	20	35	37	56	123	25
0207360020 and 0207500000	Poultry livers Frozen	86	136	167	154	183	19	15	27	54	41	8
0207360040 and 0207500000	Duck, geese or guinea Cuts and edible offal (except livers), frozen	13	42	65	49	35	94	85	127	108	271	93
208903000	Quail eviscerated Not in pieces, fresh chilled or frozen	234	266	331	321	402	480	540	523	606	771	538
0210902000 and 0208904000	Meat of poultry heading 0105 and edible meat offal	1629	18	81	63	84	60	13	40	46	48	83

Source: US International Trade Commission. Http://dataweb.usitc.gov/scripts

7.0 JAPANESE QUAIL/JAPANESE QUAIL EGGS

Japanese quail or coturnix are grown for:
- the production of meat throughout Asia (including India), Europe and North America.
- animal research.
- hunting in many countries
- eggs which are used for fresh and processed products.

These are small birds producing a 120 to 180 gram eviscerated carcass at 7 to 7 ½ weeks. Quail eggs are used wherever chicken eggs are but are most often pickled.

There are several species quail. The most common quail used as food delicacies or game birds in the US are the bobwhite quail, the coturnix (Japanese or Pharaoh) quail and the Chinese painted (Button) quail.

Japanese quail have been domesticated since the 12th century. This quail became popular in the late 19th century, after the Emperor of the time claimed that quail meat had alleviated his tuberculosis. The game bird has many names including:
- Common quail
- Eastern quail
- Asiatic quail
- Stubble quail
- Red-throat quail
- Japanese gray quail
- Japanese migratory quail
- King quail
- Japanese King quail
- Pharaoh's quail

These game birds are raised for:
- outdoor sporting clubs
- restaurants
- quail eggs, which are eaten as an alternative to chicken eggs. Pickled quail eggs are increasing in popularity.

7.1 Sector Summary

7.1.1 Global Production & Trends

The production of Japanese quail as a meat bird developed over the past century with major expansion in the past decade. In North America, commercial production is concentrated on a few large farms. While a secondary product for the industry, egg production is a major consumer product.

7.1.2 Demand, Market and Distribution Trends

The market for quail is expanding, primarily into the restaurant and food service trade, as they make a very consistent portion controlled product. Distribution is through both exotic and conventional meat distributors to a full range of European, Asian and North American style restaurants.

There may be an opportunity to produce quail eggs for the production of the main immoglobulin fraction of fowls (IgY) derived from the egg yolks of Japanese quail hens. IgY is reported to be superior to mammalian IgG and the use of eggs is more acceptable in terms of animal welfare, since IgG is obtained by bleeding.

7.1.3 Marketing Issues

Marketing issues are related to the competition in servicing the California market.

7.1.4 Industry Structural Issues

There is only one major BC quail producer using one processor although other small producers may appear from time to time to producer for local and personal markets. As such there is limited structure to the industry. There may be an opportunity for some additional production to replace quail imports from out-of -province currently entering the BC market. At the present time, all distributors do not purchase from the one processor currently handling the product.

7.1.5 Industry Challenges

The challenge for the industry involves maintaining the level of growth being experienced and capitalizing on new opportunities as they arise. Successfully replacing the quail products currently entering the BC market would be a good first indicator of the potential competitiveness of the BC industry.

The marketing chain for quail products is closely guarded by current distributors of quail products in BC and elsewhere. Entry into existing markets in the US and the Far East will require developing relationships with existing distributors based on trust in quality and availability of supply.

7.1.6 Industry Needs

A study of the markets for quail products and the characteristics of quail product users would assist in characterizing current consumers and potential growth areas.

Research confirmation of the purported medicinal properties of quail and quail eggs could expand demand for quail products among health-conscious consumers.

Opportunities relating to the use of quail to produce Avian immunoglobulin fraction could be determined by investigating the market and feasibility of pursuing this direction in BC.

7.1.7 Recommendations

The production of BC quail can be increased to replace product currently coming into the province from eastern Canada although pricing of the product may be a factor. The industry should look at cooperating with other game bird producers to form an organization to share production and market information.

7.2 Canadian Situation

Table 7-1 presents information on the total game bird slaughter for Canada for the years 1990 to 2000. There is no breakout of quail products in the statistics, although a sizeable proportion of the game bird slaughter is quail.

Table 7-1
Canada Game Bird Slaughter, 000's of Birds, 1990 - 2000, 000's of Birds

Year	000's birds
1990	6,857
1991	6,217
1992	7,420
1993	10,461
1994	7,741
1995	8,184
1996	9,081
1997	9,195
1998	9,336
1999	9,514
2000	10,581

Source: Agriculture and Agri-Food Canada. CFIA Inspected Establishments

Table 7-2 presents data on Canadian imports and exports of game birds. Quail are not differentiated in the statistics.

Table 7-2
Canada Game Bird Trade, Kilograms, 1990 - 2000.

Year	Imports	Exports	Net Exports
1990	210,183	260,322	50,139
1991	235,062	326,779	91,717
1992	164,837	277,168	112,331
1993	112,339	362,468	250,129
1994	105,954	341,690	235,736
1995	90,211	492,608	402,397
1996	111,953	517,718	405,765
1997	93,975	419,790	325,815
1998	78,374	617,499	539,125
1999	53,336	194,274	140,938
2000		487,107	

Source: Agriculture and Agri-Food Canada. CFIA Meat Inspection Certificates

7.2.1 British Columbia

BC quail production has developed considerably over the past 10 years with production of quail about 2,000,000 per year, up from about 100,000 per year in 1991. Much of this product is going into the California market. In addition because of the competitive situation, one local distributor brings in about 100,000 lb. annually from eastern Canada to satisfy his customers.

There is a major market for quail eggs, also being supplied by BC producers. These numbers are unavailable although they have been reported to be in the area of 3,000,000 per year. Eggs are sold in 24's through a range of distributors, primarily to the BC Asian-origin market.

7.2.2 Ontario

Table 7-3 provides the Ontario slaughter statistics through provincially inspected plants for selected game birds for the year 2000. This data does not include slaughter from federally inspected plants, and therefore does not include quail meat that would leave the province.

Nevertheless, Table 7-3 suggests (on the basis of slaughter numbers) that the 2000 Ontario domestic market for game birds consisted of quail (82%), followed by squab (14%), partridge (3%) and pheasant (<1%). Clearly, the Ontario quail meat market is more substantial and more developed than other game bird markets.

Table 7-3
Ontario Provincial Slaughter Statistics, 2000, by month, Selected Game Birds.

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
Partridge	1,415	1,710	1,310	1,280	1,860	2,464	1,540	1,786	1,410	2,216	2,305	2,090	21,386
Pheasant	597	40	253	14	18	25	27	19	247	1,247	1,664	1,178	5,329
Pigeons	7,954	10,110	8,157	8,345	11,464	11,404	9,753	12,774	9,229	10,000	10,352	6,919	116,461
Quail	67,815	48,165	27,550	44,450	58,470	56,750	55,650	50,400	55,200	72,854	73,900	56,500	667,704

Source: Ontario Ministry of Agriculture, Food and Rural Affairs. Food Inspection Branch

An eastern distributor reports that he sells 160 gram jumbo quail dressed at $1.40CAD each.

7.2.3 Quebec

Table 7-4 provides the Quebec slaughter of game birds in provincial plants for the years 1995 - 1999. Based on the last complete year of data (1998), the Quebec domestic game bird market is indicated to be over 94% quail, followed by guinea fowl (2.3%), pheasant (1.7%), squab (0.6%) and partridge (0.4%). It may also be noted that the Quebec quail slaughter has grown dramatically in the 1995-1999 period.

Table 7-4
Quebec Provincial Slaughter of Selected Game Birds, 1995 -1999.

Quebec Game Bird Slaughter in Provincial Plants - head

	1995	1996	1997	1998	1999*
Quail	29,344	83,343	242,279	315,769	154,251
Pheasant	11,621	10,980	8,702	5,532	8,406
Guinea Fowl	9,446	13,918	13,938	7,755	2,984
Partridge	3,348	5,441	5,849	4,069	1,495
Pigeon	2,358	2,881	7,458	1,293	1,849
Total	56,117	116,563	278,226	334,418	168,985

* first ten months only

Source: Agriculture and Agri-Food Canada. CFIA

7.3 International Quail Industry

7.3.1 United States

Quail Production

- Within the US there is a considerable number of Bob White quail and other game birds raised for use in hunting preserves. For instance in Pennsylvania, there are 20 commercially regulated shooting grounds and 200 privately regulated shooting grounds. To service these markets professional game breeders in Pennsylvania produce 500,000 commercial birds, annually with the Pennsylvania Game Commission also producing birds.

- In 1999, a Sumter, South Carolina firm (established in 1971) was processing close to 10 million quail annually and was the largest quail producer in the US.

- This South Carolina firm started operations by raising quail for release in private hunting preserves. In 1974, the company realized the European Pharoah quail they produced were too migratory to be used effectively for hunting birds, but that there was a ready local market for the meat.

Markets

- Quail is more mainstream than other game birds in South Carolina, such as ducks or doves. The Sumter firm markets quail to food distributors and restaurants as an "all-you-can-eat" buffet item. This has been the best special yet for one restauranteur. Another quail preparation that has received accolades is smoked quail on pizza.

- Pharoah quail have become preferred to the North American "Bob White" variety because of their superior flavour.

Pricing

- Quail is becoming more familiar in finer restaurants, costing about $12USD as an entree in the US.

- A firm selling quail on the internet, lists 4 South Carolina quail at $21.45USD per pack.

- A Seattle firm lists a pack of 6 whole quail (4oz. ea) at $12.95 and 4 semi-boned quail at $11.35USD.

Trade

Tables 7-5, 7-6 and 7-7 present data on the volume of US quail meat imports by originating country

for the 1991-2001 period. Canada represents the source for virtually all US quail meat imports, exporting 771 metric tons to the US in 2000, and likely to set an even higher level in 2001. US imports of quail meat from Canada have more than doubled in the 1991-2000 period, growing at an average compound rate of almost 13% % per annum.

Table 7-8 compares the total custom value and average customs value per kilogram of quail meat entering first, the US generally, and second, through the Seattle port of entry specifically. It is suggested that some or all of the product entering through Seattle will have come from BC.

Between 15% and 19% of total Canadian quail meat shipments entered the US through Seattle in the 1996 to 2000. For first 7 months of 2001, the proportion of quail entering through Seattle has risen to 22%.

The average customs value of quail meat per kilogram are higher for Canada as a whole than for US west coast imports through Seattle. The reason for this difference is not apparent, but may relate to more competition in West Coast markets or lower quality of quail entering the US through Seattle port of entry. It is also noted that the average values for quail meat have trended downward through the period, probably in response to increased price competition and increased productivity of producers.

Table 7-5
US Quail Meat Imports, 000's Kilograms, 1991 - 2001.

HS Code	Origin	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
						000 kg						Jan-Jul
0208903000	Portugal	0	0	0	0	0	0	0	0	1	0	0
	Canada	234	266	331	321	402	480	540	523	605	745	538
	Spain	0	0	0	0	0	0	0	0	0	26	0
	China	0	0	0	0	5	0	0	0	0	0	0
	New Zealand	12	0	0	0	0	0	0	0	0	0	0
	Total	246	266	331	321	407	480	540	523	606	771	538

Source: US International Trade Commission. Http://dataweb.usitc.gov/scripts

Table 7-6
US Quail Meat Imports, $000 US, 1991-2001.

HS Code	Origin	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
						$000 US						Jan-Jul
0208903000	Portugal	0	0	0	0	0	0	0	0	4	0	0
	Canada	1,504	1,689	2,037	1,958	2,445	3,018	3,361	3,183	3,615	4,241	2,825
	Spain	0	0	0	0	0	0	0	0	0	61	0
	China	0	0	0	0	20	0	0	0	0	0	0
	New Zealand	79	0	0	0	0	0	0	0	0	0	0
	Total	1,583	1,689	2,037	1,958	2,465	3,018	3,361	3,183	3,619	4,302	2,825

Source: US International Trade Commission. Http://dataweb.usitc.gov/scripts

Table 7-7
US Quail Imports, $ US per Kilogram, 1991 - 2001.

HS Code	Origin	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
							$000 US/kg					Jan-Jul
0208903000	Portugal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00
	Canada	6.43	6.35	6.15	6.10	6.08	6.29	6.22	6.09	5.98	5.69	5.25
	Spain	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.35	0.00
	China	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00
	New Zealand	6.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Average	6.43	6.35	6.15	6.10	6.06	6.29	6.22	6.09	5.97	5.58	5.25

Source: US International Trade Commission. Http://dataweb.usitc.gov/scripts

Table 7-8
US Quail Imports from Canada - Quail Eviscerated , Not in Pieces, Fresh, Chilled or Frozen, HS Code 0208.9030.00

Year	All US Ports of Entry			Seattle Port of Entry		
	'000 Kg	$000 US	Av. $ Per Kg	'000 Kg	$000 US	Av. $ Per Kg
1991	234	1,504	6.43	4	32	8
1992	266	1,689	6.35	12	63	5.25
1993	331	2,037	6.15	6	33	5.5
1994	321	1,958	6.15	14	53	3.79
1995	402	2,445	6.08	39	204	5.23
1996	480	3,018	6.29	75	426	5.68
1997	540	3,361	6.22	104	597	5.74
1998	523	3,183	6.09	90	444	4.93
1999	606	3,615	5.97	91	434	4.77
2001	771	4,241	5.5	135	571	4.23
2001 (Jan-Jul)	538	2,825	5.25	117	551	4.71

Source: US International Trade Commission. Http://dataweb.usitc.gov/scripts

As is the case with silkies, the California processor is concerned about the amount of quail coming into the California market, competing with their product. The prices are quite low, to the point that they are cutting US producers out of US markets.

7.3.2 Egypt

- An expanding Egyptian quail farm is producing more than 6,000,000 quail per year and touts itself as the largest in the Middle East. The statistics are picked up under the pigeon category. It is noted in the web site that European contact is channelled through a German distributor. *www.quail-farm.rog/about.htm*

7.3.3 Hungary

- Research being conducted in Hungary has found that immunoglobulin (IgY) derived from the yolks of Japanese quail eggs has a higher tolerance to temperature, pH and ion strength than mammalian origin antibodies (IgG). This may impact the usage of quail eggs for this purpose. In addition the use of eggs is more acceptable in terms of animal welfare since mammalian IgG is obtained by bleeding.

7.4 Conclusions

The production and marketing of BC Japanese quail has increased rapidly over the past few years due to

- increases in Asian population
- increased utilization of quail in European and North American style restaurants and food service operations and
- development of major markets in the US, primarily California.

There appears to be opportunities for market penetration by BC producers in the following areas:

- market development in the US
- replacement of product coming into BC and western Canada from eastern Canada.

7.5 Recommendations for Investigations by the Avian Research Centre

- Develop hybridization and genetic strains to increase the numbers and size of the finished product
- Development of value added products using quail eggs

8.0 PHEASANT

Pheasant is a traditional game bird originally used mainly for hunting but now raised for both meat and hunting preserve use. For the most part the breeds used for each differ. A native of Asia, pheasant found fame in Europe as a hunting and eating bird. It was introduced to England by the Romans.

Pheasants have a dressed weight of about 1.2 kg and reach market weight at about 20 weeks. Most pheasant are raised in large fully enclosed outside pens with one main crop per year.

8.1 Sector Summary

8.1.1 Global Production and Trends

The global market for pheasant is very thin with most of the product being used in up scale restaurants. North American production is centered with a few large producers and many hobby farmers. In addition there are a considerable number of hunt clubs, in jurisdictions where they are approved, which produce pheasant for use in their properties as well as for release on public lands. This sector of the business produces much lower numbers and usually use different types of birds.

8.1.2 Demand, Market and Distribution Trends

The demand for pheasant in European style restaurants appears to be relatively stable. The demand within the US for Canadian product has a lot to do with the exchange rate of the Canadian dollar although the Canadian industry has developed an international reputation for a quality product in recent years.

The ease of producer entry and exit to the industry (i.e., limited costs for chicks and a netted facility plus the fact that there is one crop per year), lends the industry to rapid movements from under to over production. Concerns have been raised within the industry that currently stable prices will encourage former producers with facilities already in place to re-enter the industry, leading to depressed prices.

8.1.3 Marketing Issues

Primary marketing concerns are related to fluctuations in the demand/supply balance as it related to prices received for products. There is potential for market development outside BC and opportunity to replace pheasant coming from eastern Canada.

8.1.4 Industry Structural Issues

The BC industry consists of one producer, one processor, one distributor, a few hunt clubs and their

suppliers. There is limited focus on industry issues that might bring mutual benefits to industry participants.

8.1.5 Industry Challenges

The pheasant industry does not have a game plan on how to stimulate demand, which would offset the detrimental effects of cyclical levels of production. Development of additional markets, possibly including value added products, should be a strategic direction for the industry investigate.

8.1.6 Industry Needs

The main industry needs, with the small number of players involved, is a business plan. Components should include consideration of the development of a long term viable industry with world scale production serving the BC and export markets.

8.1.7 Recommendations

Development of a game farm industry association which could be an information exchange and lobby organization should be a priority followed by the development of value added pheasant products, possibly emulating the success experienced by an Ontario producer/processor with a range of value added products.

8.2 The Canadian Pheasant Industry

Table 8-1 presents information on the total game bird slaughter for Canada for the years 1990 to 2000. There is no breakout of pheasant in the statistics, only a small proportion of the game bird slaughter is pheasant

Pheasant production in Canada has increased over the past few years primarily in eastern Canada where at least one producer has developed a significant business in both the US and Japan. Production in the US is also reported to have increased.

Table 8-1 contains information on the total game bird slaughter for Canada for the years 1990 to 2000 while Table 8-2 contains information on game bird imports and exports for similar years, as reported by the Canadian Food Inspection Agency.

Table 8-1
Canada Game Bird Slaughter, 1990 - 2000, 000's of Birds.

Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000

"000 birds	6,857	6,217	7,420	10,461	7,741	8,184	9,081	9,195	9,336	9,514	10,581

Source: Agriculture and Agri-Food Canada. CFIA Inspected Establishments.

Table 8-2 shows Canadian game bird imports and exports for the 1990-2000 period. Generally, game bird imports have declined substantially while exports are in a growth trend over the period. In 2000, Canadian exports of game bird meat amounted to about 487 metric tons.

Table 8-2
Canada Game Bird Trade, 1990 - 2000, Kilograms.

Year	Imports	Exports	Net Exports
1990	210,183	260,322	50,139
1991	235,062	326,779	91,717
1992	164,837	277,168	112,331
1993	112,339	362,468	250,129
1994	105,954	341,690	235,736
1995	90,211	492,608	402,397
1996	111,953	517,718	405,765
1997	93,975	419,790	325,815
1998	78,374	617,499	539,125
1999	53,336	194,274	140,938
2000		487,107	

Source: Agriculture and Agri-Food Canada. CFIA Meat Inspection Certificates

8.2.1 British Columbia

The demand for pheasant is determined by the demand for meat products and the demand for birds for hunting. Meat pheasants are produced seasonally, in the late summer and fall. The cycle for hunt clubs begins with hatching chicks early in the spring and readying the adult pheasants for hunting in the August to October period.

The only major producer of pheasants in BC produces about 25,000 birds per year. Most of these are Campbell's Whites for the restaurant market while the remainder include a few hundred ringnecks for a couple of hunting preserves. The producer has recently concluded an arrangement with a local game meat distributor to be the exclusive marketer of all of their meat product.

The pheasant market is steady at about $5.00CAD/lb. with most product going to local markets except for a small amount to export. Most of the product is sold to upscale restaurants with a small amount into the local Asian market. Although the market for pheasant was very soft in the mid-1990's, for the past three years it has been quite steady.

One distributor to the BC restaurant industry is bringing in pheasant from Quebec. In addition, one large BC game bird producer is anticipating growing 15,000 birds in 2002 in order to sell into the BC and US markets while another BC game bird producer, who has not produced pheasant for a few years, is also planning to raise birds in 2002.

Another segment of the BC pheasant industry is the production of pheasants for hunt clubs. A couple of clubs on the coast are being supplied with ring neck pheasants from the main BC pheasant producer. There are also two producers/club operators, one on Vancouver Island and one in the interior, who are supplying their own clubs plus a couple of other clubs with more exotic flight pheasants such as Mongolian, Manchurian, Melanistic Mutant, and Honey Buff. The hunt club industry is declining with a number of clubs going out of business but those with more exotic flight birds are reported to be remaining steady.

The biggest concerns for the BC pheasant hunt business are provincial government regulations that:

- restrict the use of Crown land for hunting purposes. A more flexible multiple-use plan, e.g., such as the one in Washington State, pays pheasant growers to release pheasants for hunting on Crown land.
- restrict hunting on private land without a two mile buffer. Such a buffer is required for high powered rifles for large animal hunting but is unnecessary for shotgun shooting.

One BC club operates on a fee basis with 5 birds per 4 hour shoot for $90CAD for hens and $120CAD for cocks. They also sell smoked ($28CAD/lb) and chunk ($24CAD/lb) breast or whole birds with a pack of two (1.5-2.5 lbs) for $20CAD.

8.2.2 Ontario

Table 8-3 provides the Ontario slaughter statistics through provincially inspected plants for selected game birds for the year 2000. This does not include slaughter from federally inspected plants, and therefore does not include pheasants which leave the province. In Ontario federally inspected birds account for a high percentage of production with all of the largest producer's 80,000 plus pheasants being federally inspected.

Table 8-3
Ontario Provincial Slaughter Statistics, 2000, by month, Selected Game Birds.

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
Partridge	1,415	1,710	1,310	1,280	1,860	2,464	1,540	1,786	1,410	2,216	2,305	2,090	21,386
Pheasant	597	40	253	14	18	25	27	19	247	1,247	1,664	1,178	5,329
Pigeons	7,954	10,110	8,157	8,345	11,464	11,404	9,753	12,774	9,229	10,000	10,352	6,919	116,461
Quail	67,815	48,165	27,550	44,450	58,470	56,750	55,650	50,400	55,200	72,854	73,900	56,500	667,704

Ontario Ministry of Agriculture, Food and Rural Affairs
Food Inspection Branch

A pheasant producer located north of Kingston in Ontario, which began production in 1977 is Canada's largest pheasant farm. The company produced and processed 80,000 Flintshire White pheasants in 2000, a 30% increase over 1999. A large percentage of their production goes into export markets, with the most important being the US and Asia. All of their product is grown outside in free range under nets enabling the supply of fresh product from July to December and frozen product the rest of the year. In 2001, the firm was assured future growth by being chosen as the exclusive supplier of pheasants to a food service distributor to over 356,000 restaurants in North America.

This Ontario firm also sells a range of value-added pheasant products, including breast and thigh meat, jumbo boneless quail stuffed with pheasant, smoked pheasant breast, smoked boneless pheasant roll and partridge.

8.2.3 Quebec

Table 8-4 presents the Quebec slaughter of game birds in provincial plants for the years 1995 - 1999. Based on the last complete year of data (1998), the Quebec domestic game bird market is indicated to be over 94% quail, followed by guinea fowl (2.3%), pheasant (1.7%), squab (0.6%) and partridge (0.4%). It may also be noted that the Quebec pheasant slaughter has declined in the 1995-1999 period.

Table 8-4
Quebec Provincial Slaughter of Selected Game Birds, 1995 -1999.

Quebec Game Bird Slaughter in Provincial Plants - Number of Head

	1995	1996	1997	1998	1999*
Quail	29,344	83,343	242,279	315,769	154,251
Pheasant	11,621	10,980	8,702	5,532	8,406
Guinea Fowl	9,446	13,918	13,938	7,755	2,984
Partridge	3,348	5,441	5,849	4,069	1,495
Pigeon	2,358	2,881	7,458	1,293	1,849
Total	56,117	116,563	278,226	334,418	168,985

* first ten months only

Source: Agriculture and Agri-Food Canada. CFIA.

8.3 The International Pheasant Industry

8.3.1 United States

Production of pheasants in the US is reported to have increased considerably in recent years. One producer in Princeton, Minnesota began production with 50 chicks in 1967 and produced over 500,000 pheasants in 2001 along with a significant number of chukar partridge and mallard duck. They are one of the largest game bird propagation facilities in the US. Pricing for products on their web site are one pair of pheasant (4-5 lb.) or four chukar partridge or one pair of mallard duck for $39.95USD plus $10.50USD shipping and handling.

A California processor has concerns about Canadian pheasants putting pressure on US producers. Most US destined pheasants are originating in Ontario and Quebec.

8.3.2 Australia

The market for pheasant is not large in Australia, with one producer of 25,000 pheasants filling 80% of the market With a dressed weight of 1.2 kg they sell for about $13AUD per bird to restaurants, primarily in Sydney.

8.4 Conclusions

There are opportunities to market more BC pheasants but they relate primarily to the US import prospects resulting from a favourable dollar exchange rate. The market itself is fickle, relying on the interest of the chefs and public. A newspaper article from Australia contains an illustrative quote: "French restaurants were all the go in the 1970's and now it seems we've gone full cycle and there's a resurgence of interest now". This situation is not unlike BC where one distributor described the market in mid-1990's as being very soft but for the past three years as being quite steady. Although there is a minor Asian interest in pheasant, demand is more influenced by the European restaurant menu. Pheasant is a meat product where overproduction, without firm markets in place, could severely depress the price.

8.5 Recommendations for Investigations by the Avian Research Centre

- Find production methods for pheasant which would work in wet weather. Pheasants do not react well to rain.
- Develop innovative value added pheasant based products.

9.0 CHUKAR PARTRIDGE

Chukar partridges originated in Asia and were brought to North America in the late 19th century. They thrive in dry arid and semi-arid regions of the western US where they have been used primarily for hunting. Over the past century, Chukars have been domesticated for meat consumption in the restaurant market. Chukars are from the pheasant family and are about 60% the size of pheasants, about 1 to 1 ½ lbs. live weight. In the US they are one of the most commonly kept and bred of all game birds, most often for hunting reserves and release. Eggs are usually laid from April to July with 40 to 50 eggs per hen being common.

9.1 Sector Summary

9.1.1 Global Production and Trends

Chukar partridge does not appear to be a global industry. Most of the production appears to be used locally although there is a significant production in the US for hunting and release and for sale along with other game birds as a frozen product. This situation is similar to Canada where most distributors offer partridge as an item within their product mix. Demand is said to be quite seasonal with production geared to the cooler months also reflecting the yearly laying cycle which tends to produce finished birds in the fall..

9.1.2 Demand, Market and Distribution Trends

The market for Chukar partridge is quite thin with restaurants either keeping it on their menu on a regular basis or not putting it there at all and only putting it on a daily sheet.

9.1.3 Marketing Issues

Because of the small size of the market to restaurants, Chukar prices are very sensitive to over or under production.

9.1.4 Industry Structural Issues

As part of the game bird industry, Chukar production and marketing would benefit from more producer information exchange through a game bird industry association.

9.1.5 Industry Challenges

The main challenges for the industry are:

- determining when and how much to produce to maintain the balance between demand and supply at prices which will return an profit to the producer
- pricing to allow the restauranteur to keep Chukar on the menu at a profitable price competitive with other offerings.
- market development to encourage additional use

9.1.6 Industry Needs

The industry needs to:

- improve promotion of partridge as a year-round restaurant item
- pursue value-added product development that lends the product to being more home-user friendly.

9.1.7 Recommendations

The producers should investigate the potential for an industry association to share production and marketing information and look at methods to increase the demand for the product through value-added types of products, such as are being marketed by the eastern Canadian pheasant and duck industries.

9.2 The Canadian Chukar Industry

Table 9-1 contains information on the total game bird slaughter for Canada for the years 1990 to 2000. There is no breakout for Chukar in the statistics, but only a small proportion of the game bird slaughter is Chukar partridge.

Chukar production has not shown any real growth in recent years.

Table 9-1
Canada Game Bird Slaughter, 1990 - 2000, 000's of Birds.

Year	000's head
1990	6,857
1991	6,217
1992	7,420
1993	10,461
1994	7,741
1995	8,184
1996	9,081
1997	9,195
1998	9,336
1999	9,514
2000	10,581

Source: Agriculture and Agri-Food Canada. CFIA Inspected Establishments

Table 9-2 shows Canadian game bird imports and exports for the 1990-2000 period. Generally, game bird imports have declined substantially while exports are in a growth trend over the period. In 2000, Canadian exports of game bird meat amounted to about 487 metric tons.

Table 9-2
Canada Game Bird Trade, 1990 - 2000, Kilograms.

Year	Imports	Exports	Net Exports
1990	210,183	260,322	50,139
1991	235,062	326,779	91,717
1992	164,837	277,168	112,331
1993	112,339	362,468	250,129
1994	105,954	341,690	235,736
1995	90,211	492,608	402,397
1996	111,953	517,718	405,765
1997	93,975	419,790	325,815
1998	78,374	617,499	539,125
1999	53,336	194,274	140,938
2000		487,107	

Source: Agriculture and Agri-Food Canada. CFIA Meat Inspection Certificates

9.2.1 British Columbia

BC production of chukar partridge is inconsistent or possibly simply seasonal. It has been suggested that producers decide at the last minute whether to produce based on the information that they have at the time that space and chicks or eggs become available. Chukar appears to be product that is used to fill out a production cycle.

One distributor says that Chukar partridge sales are steady while another says that it is currently too expensive, running $9CAD to $10CAD per bird, a level at which chefs will use other products. A local producer/processor reports that while Chukar are regularly processed, the market is very seasonal and the product is difficult to move.

9.2.2 Ontario

Table 9-3 provides statistics on the Ontario slaughter in provincially inspected plants for selected game birds for the year 2000. This data does not include slaughter from federally inspected plants, and therefore does not include Chukar partridge which leave the province.

An Ontario distributor has indicated that the partridge market is very seasonal with low demand. Partridges sell from $7.00CAD to $8.00CAD per bird to the local distributors with their cost from the producer being about $6.25CAD per bird.

Table 9-3
Ontario Provincial Slaughter Statistics, 2000, by month, Selected Game Birds.

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
Partridge	1,415	1,710	1,310	1,280	1,860	2,464	1,540	1,786	1,410	2,216	2,305	2,090	21,386
Pheasant	597	40	253	14	18	25	27	19	247	1,247	1,664	1,178	5,329
Pigeons	7,954	10,110	8,157	8,345	11,464	11,404	9,753	12,774	9,229	10,000	10,352	6,919	116,461
Quail	67,815	48,165	27,550	44,450	58,470	56,750	55,650	50,400	55,200	72,854	73,900	56,500	667,704

Source: Ontario Ministry of Agriculture, Food and Rural Affairs. Food Inspection Branch.

9.2.3 Quebec

Table 9-4 presents the Quebec slaughter of game birds in provincial plants for the years 1995 - 1999. Based on the last complete year of data (1998), the Quebec domestic game bird market is indicated to be over 94% quail, followed by guinea fowl (2.3%), pheasant (1.7%), squab (0.6%) and partridge (0.4%). No specific information on Chukar partridge slaughter has been obtained.

Table 9-4
Quebec Provincial Slaughter of Selected Game Birds, 1995 -1999.

Quebec Game Bird Slaughter in Provincial Plants - Number of Head

	1995	1996	1997	1998	1999*	2000
Quail	29,344	83,343	242,279	315,769	154,251	
Pheasant	11,621	10,980	8,702	5,532	8,406	
Guinea Fowl	9,446	13,918	13,938	7,755	2,984	
Partridge	3,348	5,441	5,849	4,069	1,495	
Pigeon	2,358	2,881	7,458	1,293	1,849	
Total	56,117	116,563	278,226	334,418	168,985	

* first ten months only; ** 2000 not available

Source: Agriculture and Agri-Food Canada. CFIA

9.4 Conclusions

There may be opportunities for the increased marketing of BC Chukar partridge meat. However, without major market or value-added development, the market is extremely small and conducive to significant price swings with slight over- or under-production. The market appears to quite local although there may be product moving to the US along with other game bird products. In any case the market is not large.

The market for Chukar partridge hinges on the interest in the restaurant trade in using the product. As with all exotic species this tends to be cyclical and depends to a large extent on the visibility of the restaurants which are promoting it. There are always opportunities for new value added products or lower pricing to stimulate interest.

Another market for Chukar in some of the states is the hunt club market. As Chukar is basically a desert bird these are mainly in the US southwest.

9.5 Recommendations for Investigations by the Avian Research Centre

- Value added products using Chukar partridge would help to extend the marketing season and range of potential users.

10.0 PARTRIDGE TINAMOU

Tinamou is a partridge that is native to Chile and which has been developed experimentally for commercial production by the University of British Columbia. There are currently two flocks, one at UBC and one with a producer. The birds finish at about 350 grams dressed at 13 weeks as compared to quail which finish at 5 ½ to 6 weeks at 160 to 200 grams.

10.1 Sector Summary

Development of production and markets for this product is in its infancy, not only within BC but in world production and markets. It is primarily known as a wild bird in South America, suitable for hunting. BC is attempting to introduce the product to the marketplace so that it can secure a portion of the markets that are being developed for game birds.

10.2 The Canadian Tinamou Industry

10.2.1 British Columbia Situation

The only commercial flock of tinamou in Canada is currently located in the BC lower mainland. The flock is being produced under license from UBC who developed the initial flock from the offspring of birds that had been brought to the province by a game bird grower.

There are currently about 1000 breeder birds split into two flocks so that there is year round production, producing about 100 tinamou for sale each week. They are being killed at a local processing plant on a custom basis and a local distributor is selling the meat.

The local distributor for the product indicates that the market potential for this product is limited by its relatively high current pricing (about $10CAD/lb.) and that pricing in the range of $6.00CAD/lb will be necessary to see sales increase. Although the product is new and different, tinamou is quite mild-flavoured and therefore does not compete effectively with guinea hen or quail. The distributor feels that there may be a long-term market, although the product will have to be priced much more competitively in order to build market share.

High cost of production is the major factor influencing pricing. New production and management protocols for improving production efficiency are being implemented as more is being learned about the bird type.

One tinamou product which has not been market tested to date is the egg, which is a deep chocolate brown in color and may have appeal as a novelty food item. The eggs may also contain fractions of pharmaceutical/biological value.

10.3 Conclusions

The potential market for tinamou will depend on development of production efficiencies allowing pricing at competitive levels with other game bird products. In addition, the mild flavour of tinamou may potentially be used to differentiate the product in the marketplace, targeting those people who find current game bird products too highly flavoured for their palate.

10.4 Recommendations for Investigations by the Avian Research Centre

- Ongoing research on tinamou on production problems and efficiencies
- Identification of clientele and marketable characteristics