



Progress In Poultry

"THROUGH RESEARCH"

PERIPHERAL AVIAN POPULATIONS AND POULTRY DISEASE CONTROL

A. A. Bickford, Extension Veterinarian, Davis Campus
A. S. Rosenwald, Emeritus Extension Pathologist, Davis Campus

Introduction

As part of our Federal Extension-funded project entitled "Efficient Resource Management in Disease Emergencies" we are attempting to identify problem areas in preventing and controlling catastrophic disease problems. One of the most obvious problem areas is definition of populations at risk and determination of the dynamics of these populations.

There are numerous sources of information on our commercial poultry populations. Several governmental agencies and industry marketing organizations are active in this area, and in many instances there is duplicative effort which provides double or triple checks of poultry population data. However, information on other avian populations is sparse and fragmented. It appears that no single agency has addressed the issue of maintaining data on backyard poultry, fancy and game chickens, and pet and exotic birds. There are identifiable information sources on captive and free-flying game birds and other free-flying birds, but the accuracy and updating of this information are open to question. There is an urgent need to improve the available information base for these avian populations.

To clarify our interest in these populations, it seems appropriate to answer these two key questions:

1) What do we mean by "peripheral avian populations"?

Clearly, we are grouping all avian populations other than commercial poultry under this heading. Primary concern is

for pet and exotic birds, fancy and fighting chickens, backyard poultry, and those wild or migratory birds that come into contact with commercial poultry. A very important point in this context is that owners and other people involved with these birds do not see themselves as "peripheral" to anyone. However misunderstood they may be, they feel every bit as justified in their relationship to their birds as the poultryman does to his flocks.

2) Why are we concerned with these avian populations?

There are several valid reasons for poultry-oriented people to be interested in avian species other than commercial poultry. Some of these are specified as follows:

. These avian populations, particularly the pet and exotic birds and game chickens, tend to be highly mobile. They are frequently imported from foreign countries (legally or illegally) where certain highly lethal diseases are endemic. Once in this country they may travel far and wide.

. Because of the international mobility, these birds have played a rather notorious role in our problems with viscerotropic velogenic Newcastle disease (VVND). With rare exceptions, all VVND incursions have originated from exotic and pet birds or game chickens. These, as well as some migratory birds, provide a continuing source of VVND virus, a variety of influenza viruses (possibly including fowl plague virus) and the psittacosis-ornithosis agent. Other infectious agents of

potential importance really haven't been looked at closely.

. Because many of the birds eventually find their way into households and backyards, these populations are extremely diffused in this country. In suburban areas, particularly, they often interface with commercial poultry.

. Since they escape any census effort, these birds represent hidden populations with virtually no information on the magnitude or geographic location of major concentrations.

. For a variety of reasons, these populations are out of touch with agencies concerned with detection and reporting of diseases. To many of the owners/keepers of these birds, disease is a mystical phenomenon--an act of God--to be accepted, ignored or handled by the nearest empiricist. Severe infectious diseases can bounce around these populations for months before being brought to the attention of a laboratory that can make an accurate diagnosis.

. These populations are extremely dynamic, with a variety of replacement sources such as domestic breeders, auctions, legitimate importers, smugglers, etc.

. These are populations with substantial needs for information and service. Efforts to study nutritional, breeding, and husbandry requirements of these birds have been miniscule. The average bird keeper has difficulty finding information on disease and qualified veterinary service. Because of legal or regulatory hangups, many bird owners shun veterinarians and diagnostic laboratories. It appears that much more effort has been expended in trying to avoid or get rid of these populations than in trying to obtain background information which would better delineate their problems.

. In aggregate, these populations are represented by ever-increasing political strength. In some areas their strength is great enough to win substantial support for their causes. Should the millions of these bird owners ever speak with one voice, it is likely that servicing their needs will become a mandate rather than the option it presents today.

. These populations seem to be stable or increasing, and they must be considered in our total disease control efforts. These birds are here and they will not be wished or legislated away.

Our Survey

In an attempt to improve our knowledge of avian species other than commercial poultry, we undertook a rather informal survey. Knowing full well that we could not contact thousands of individual bird owners, we decided to concentrate on commercial enterprises, aviaries, and organizations that deal with varied avian populations. The information-gathering effort was done by student assistants who worked whenever possible with the advice and consent of our county Cooperative Extension staff. The major objectives of this survey were:

- 1) To establish practical estimators of population. We concentrated on two primary items, namely feed and bird sales, but we attempted to obtain an indication of relative population densities in the areas surveyed.
- 2) To establish communication contacts and channels. This took the form of a search for especially knowledgeable individuals who are involved with pet and exotic birds, backyard poultry, game chickens, and game birds. In addition, we tried to identify useful channels of information for these populations.
- 3) To investigate traffic patterns in various populations. We knew at the outset this would be a rather tenuous effort, but an attempt was made to determine the major sources of various types of birds and the area served by breeders, importers, and retailers.
- 4) To evaluate disease status and reporting systems. Again, this is a difficult area, but we did inquire about disease problems, sources of diagnoses, and involvement of veterinarians.
- 5) To identify major needs for information and service. Inquiries were made regarding major problem areas, current sources of information and service, and specific needs of the various avian populations.

Results and Discussion

Survey area and contacts (Table 1). Thirteen counties in northern California, principally in the Sacramento and San Francisco areas, and four counties in the Los Angeles area were included in this survey. A total of 374 contacts were made, 233 (62%) in northern California counties and 141 (38%) in southern California counties. The total types of contacts in the two geographic regions differed slightly. For the northern sector, 38% were feed stores and 54% pet stores, while in the southern sector 54% and 35%, respectively, comprised feed and pet store contacts. The remaining minor percentages, 8% for northern California and 11% for southern California, comprise other categories of survey contact points--hatcheries, game bird farms, major suppliers and individuals.

Table 1. Summary of survey contacts

Location	Feed stores	Pet stores	Hatcheries	Game bird farms	Major suppliers	Individuals*	County total
<u>No. California counties</u>							
Sacramento	12	10	1	1	-	-	24
Solano, Yolo, Napa	7	3	-	1	-	1	12
San Joaquin, Stanislaus	13	9	1	3	-	-	26
Alameda	7	26	-	-	7	-	40
Contra Costa	11	10	-	-	-	3	24
Santa Clara	10	23	-	-	-	-	33
San Mateo	5	17	-	-	-	-	22
San Francisco	-	13	-	-	-	-	13
Marin	4	10	-	-	-	-	14
Sonoma	19	5	-	-	1	-	25
Subtotal	88	126	2	5	8	4	233
<u>So. California counties</u>							
Los Angeles area:							
Midcities	9	1	1	1	1	-	13
San Fernando Vly., West & central	8	19	-	-	-	1	28
North	7	3	-	-	-	-	10
West	2	7	-	-	-	-	9
Central & SE, (Whittier)	6	1	-	1	3	-	11
East	6	-	-	-	2	1	9
Orange	17	12	-	1	1	-	31
Riverside	13	1	-	-	-	2	16
Ventura	8	6	-	-	-	-	14
Subtotal	76	50	1	3	7	4	141
State total	164	176	3	8	15	8	374

*Includes veterinarians, nutritionists, and private breeders.

Population estimation (Tables 2 & 3). For all the areas surveyed we found 174,044 tons of poultry feed and 2,619,760 pounds of cage-bird feed per year being sold to private citizens for pet birds. The amount of poultry feed being sold roughly converts to 3.5 million poultry-type birds. In addition to this population, 861,839 poultry birds are being sold each

year. At present there is no reliable way to convert cage-bird feed figures into cage-bird population figures, but we can account for 708,036 cage-bird sales annually. We have assumed these figures are conservative at best since we did not conduct the survey for the whole state of California.

Table 2. Summary of population estimators - Northern California

Location (county)	Poultry feed (tons/yr)	Cage bird feed (lbs/yr)	Poultry sales (birds/yr)	Cage & misc. bird sales (birds/yr)
Sacramento	4,138	45,580	85,560	5,080
Solano, Yolo, Napa	1,980	7,800	35,488	1,548
San Joaquin, Stanislaus	79,038	12,600	125,800	5,260
Alameda	4,915	146,076	35,600	63,681
Contra Costa	2,771	68,800	41,535	4,915
Santa Clara	32,180	296,340	40,944	34,776
San Mateo	388	48,960	4,900	4,572
San Francisco	4	187,800	-	7,248
Marin	408	58,200	14,400	1,872
Sonoma	5,766	100,800	82,380	5,904
Total	132,288	972,956	466,507	134,556

Table 3. Summary of population estimators - Southern California

Location (county)	Poultry feed (tons/yr)	Cage bird feed (lbs/yr)	Poultry sales (birds/yr)	Cage & misc. bird sales (birds/yr)
Los Angeles County:				
Midcities	1,012	2,500	183,900	3,120
San Fernando Vly., West & Central	9,256	1,013,108	31,704	32,156
San Fernando Vly., North	9,653	82,400	46,800	792
Los Angeles, West	60	235,096	1,300	4,432
Los Angeles, SE & Central (Whittier)	1,904	144,000	48,240	363,480
Los Angeles, East	10,451	-	13,080	115,200
Orange	2,392	65,600	55,940	53,700
Riverside	4,576	104,000	14,268	600
Ventura	1,352	-	-	-
Total	41,756	1,646,804	395,232	573,480

Traffic patterns (Tables 4,5,6). An attempt was made to discover what types of bird sources are available to retail pet dealers and what amount of geographic movement occurs between wholesale and retail pet and pet-supply dealers. In terms of type of bird source, 255 of the 374 contacts said they dealt with birds in one way or another, and their responses totaled 275, as some named more than one type of supplier. The results were as follows: 166 (60%) named a major commercial supplier; 60 (27%) local (individual) breeders; 25 (9%) possessed their own breeding stock; and 24 (9%) declined to state their source. In addition to this data, we were able to ascertain to what extent birds are received and shipped from/to nonlocal (out-of-county) areas by the survey contacts. All the counties surveyed have considerable out-of-county traffic, and in terms of acquisition of birds from the larger suppliers (usually smaller suppliers would not ship birds),

Table 4. Summary of traffic patterns - source of birds

Location (county)	Major suppliers*	Local private breeders	Own breeder flock	Uncertain or no comment	No. contacts surveyed**
Sacramento	8	2	1	10	21
Solano, Napa, Yolo	6	2	2	2	11
San Joaquin, Stanislaus	11	7	5	1	21
Alameda	20	10	3	3	34
Contra Costa	14	9	0	1	20
Santa Clara	24	3	3	0	25
San Mateo	12	5	0	1	18
San Francisco	8	7	0	0	12
Marin	6	1	0	0	7
Los Angeles	41	10	5	4	58
Orange	14	4	1	2	21
Riverside	2	0	5	0	7
Total	166	60	25	24	255

*Includes importers, wholesalers, and large commercial breeders.

**Some contacts named more than one type of supplier; thus for 255 survey contacts, 275 responses were obtained. Also, of the total 374 survey contacts, 119 did not deal with birds themselves.

Table 5. Summary of traffic patterns - geographic trends - acquisition

County	Contacts acquiring birds locally	Contacts acquiring birds from nonlocal areas
Los Angeles	44	6 Santa Rosa, CA (3) Iowa (1) Missouri (2)
Orange	17	4 Santa Rosa, CA (3) Missouri (1)
Riverside	6	0
Sacramento	6	10 Petaluma, CA (5) Los Angeles, CA (3) Hayward, CA (1) Florida (1)
Solano, Yolo, Napa	3	5 Santa Rosa, CA (3) Oakland, CA (1) Hayward, CA (1)
San Joaquin, Stanislaus	9	9 Santa Rosa, CA (5) Sacramento, CA (2) San Francisco, CA (1) Hayward, CA (1)
Alameda	25	6 Palos Verdes, CA (1) Anaheim, CA (1) Florida (4)
Contra Costa	17	4 So. California (2) Fresno, CA (1) Idaho (1)
Santa Clara	20	4 Los Angeles, CA (2) So. California (1) Florida (1)
San Mateo	17	2 Sacramento, CA (1) So. California (1)
San Francisco	11	1 Los Angeles, CA (1)
Marin	7	0
Sonoma	14	1 Oregon (1)
Total	196	52

52 (21%) of 248 responses named a non-local source of birds. In terms of distribution, 30 (11%) of 271 responses shipped birds to nonlocal areas. Of the 52 contacts naming nonlocal sources of birds, 12 were out-of-state (generally these were exotics, coming from four different states). Also, of the 30 responses

naming nonlocal destinations, 15 are shipping to areas outside of California. Finally, we obtained names of 45 major suppliers of either cage-bird or poultry types of birds, and 7 of these were located in states other than California.

Table 6. Summary of traffic patterns - geographic trends - distribution

County	Contacts distributing birds locally	Contacts distributing birds from nonlocal areas
Los Angeles	49	7 So. California (1) California (1) USA (4)
Orange	18	2 California (1) World (1)
Riverside	4	1 California (1)
Sacramento	19	1 California (1)
Solano, Yolo, Napa	10	1 No. California (1)
San Joaquin, Stanislaus	17	8 No. California (3) Imperial Vly., CA (1) Sacramento, CA (2) California (1) Out of state (1)
Alameda	31	4 Out of state (1) USA (1) Guam (1) Canada (1)
Contra Costa	19	0
Santa Clara	24	2 Western US (1) USA (1)
San Mateo	18	1 Out of state (1)
San Francisco	10	1 USA (1)
Marin	8	0
Sonoma	14	2 Lake County, CA (1) Western USA (1)
Total	241	30

Disease status and reporting systems (Tables 7,8,9). Questions pertaining to source of medical advice, sale of medications, and disease problem areas were included in our survey in order that we might gain insight into the health and disease facets of the peripheral avian populations. The survey question regarding "source of medical advice" applied to 363 of the 374 survey contacts, that is, 11 of the contacts dealt only with supplies and/or did not have any contact with the general public. The results were as follows: 152 (42%) self diagnosis; 98 (27%) named a private veterinarian; 23 (6%) named a state diagnostic lab; 72 (20%) replied "none" or "no comment;" and 18 (5%) named individuals, such as farm advisors or private citizens.

All of the pet and feed stores and 7 of the 8 major suppliers dealt with bird supplies: therefore, the question about sale of medications was applicable only to these businesses. Of 347 responses,

291 (84%) distribute medication(s), 40 (11%) carried no medication, and 16 (5%) either had no comment or the information was not obtained.

Table 7. Summary of disease status - distribution of medications*

Location (county)	Distributes medications	No medications distributed	No comment info not obtained
Sacramento	20 (9/11)**	1 (1/0)	1 (0/1)
Solano, Yolo, Napa	10 (5/5)	2 (0/2)	0
San Joaquin, Stanislaus	18 (7/11)	3 (1/2)	1 (1/0)
Alameda	31 (28/3)	5 (3/2)	3 (3/0)
Contra Costa	18 (9/9)	2 (0/2)	2 (2/0)
Santa Clara	25 (20/5)	5 (1/4)	2 (1/1)
San Mateo	20 (18/2)	2 (0/2)	0
San Francisco	11 (11/0)	3 (3/0)	1 (1/0)
Marin	11 (10/1)	3 (0/3)	0
Sonoma	21 (8/13)	4 (0/4)	0
Los Angeles	68 (40/28)	6 (1/5)	1 (0/1)
Orange	27 (12/15)	2 (0/2)	2 (1/1)
Riverside	11 (1/10)	2 (0/2)	3 (0/3)
Total	291	40	16

* The survey question regarding sale of medications applied only to pet and feed stores and 7 of the 8 major suppliers.

** The figures in parenthesis show the number of (pet store/feed store) contacts. The 7 major suppliers were included in these groups for summary purposes, depending on whether they dealt with cage-birds or poultry.

Table 8. Summary of disease status - source of medical advice

Location (county)	Self diagnosis	Veterinarian	State diagnostic lab	None or no comment	Other*
Los Angeles	41	28	3	5	2
Orange	17	5	1	7	1
Riverside	15	0	1	0	0
Sacramento	6	1	1	14	1
Solano, Yolo, Napa	2	4	1	7	1
San Joaquin, Stanislaus	3	5	7	11	2
Alameda	16	11	0	3	4
Contra Costa	6	12	0	4	1
Santa Clara	13	10	0	9	2
San Mateo	10	7	0	4	1
San Francisco	4	6	0	2	0
Marin	4	3	0	5	1
Sonoma	15	6	9	1	2
Total	152	98	23	72	18

* Includes Farm Advisors, private citizens.

Two questions on our survey form sheet were applicable to the important subject of disease problem areas. One of the questions asked to name "disease problems," and the usual response here was "none." The other question, "frequency and types of questions from customers related to disease and husbandry," almost always produced a positive response.

Table 9. Summary of disease status - disease problem areas*

Location (county)	Respiratory system	Diarrhea and/or enteritis	Production and/or breeding	Nutritional	External and/or internal parasites	Miscellaneous**
Sacramento	9	4	8	5	7	10
Solano, Yolo, Napa	4	3	6	3	2	8
San Joaquin, Stanislaus	5	2	4	6	11	6
Alameda	9	5	11	10	2	1
Contra Costa	6	0	8	7	7	1
Santa Clara	4	2	8	4	4	0
San Mateo	8	2	6	7	2	0
San Francisco	6	3	3	3	0	0
Marin	4	2	2	5	2	0
Sonoma	3	4	17	13	6	3
Los Angeles	7	3	0	1	7	10
Orange	1	0	0	1	1	6
Riverside	0	0	0	0	1	0
Total	66	30	73	65	52	45

* Data represent responses to the questions "Disease Problems" and "Frequency and types of questions from customers related to disease and husbandry."

** Includes problems such as "Droopiness," Bluecomb, "Sudden Death," spastic legs, infectious diseases, pullorum, Newcastle, Marek's, Pox, thyroid dysplasia, rickets, malaria, tumors, fractures.

Since any affirmative answers to these questions were essentially indistinct, the data were pooled and summarized collectively. However, it is important to note that, generally, when the question was stated in such a way as to imply their (the proprietor's) disease problems, communication was abruptly halted. A rephrasing of the question so as to imply their customers' disease problems would usually reestablish communication and produce pertinent information. The data have been summarized under the following disease problem areas: 66 (20%) respiratory system; 30 (9%) diarrhea and/or enteritis; 73 (22%) production and/or breeding; 65 (20%) nutritional; 52 (16%) external or internal parasites; and 45 (13%) other.

##

Distribution of PROGRESS IN POULTRY is made to industry leaders and fellow researchers. Anyone wishing to be placed on the mailing list may send a request to the Editor.

Milo H. Swanson
 Milo H. Swanson, Editor PIP
 University of California
 Riverside, CA 92521

