Here is what some of the 1,221 respondents had to say about the TRAFFIC USA 1990 Psittacine Captive Breeding Survey (CBS): “Think it is great! I am a strong advocate of census and information gathering. The results benefit all, especially the birds.” “Excellent idea! Similar questionnaires should be done for finches and softbilled birds as well. This (survey) makes me wish I had done better record keeping.” “Thank you for the survey, I learned things about my collection I didn’t realize before. I plan to keep better records as a result.”

This unprecedented response marks the first time such large numbers of private aviculturists in the United States have responded to a comprehensive national survey of captive breeding. This article summarizes the results of the census portion of the CBS. They show that aviculturists are successfully breeding many psittacines, and have begun to demonstrate their potential to meet the pet industry’s growing demand for captive-bred birds.

**Background**

TRAFFIC USA’s involvement in assessing private aviculture’s role in breeding psittacines for the pet industry emerged from deliberations of the Cooperative Working Group on Bird Trade (CWGBT). The CWGBT, a diverse group of representatives from the pet industry, animal welfare organizations, aviculture, avian veterinary practitioners, conservation organizations and the zoological community, was convened by World Wildlife Fund - U.S. (WWF) in 1988 to address the problems associated with the international trade in wild-caught birds. After two years of intense research and discussion, the CWGBT recommended that U.S. imports of wild-caught birds for the pet trade be phased out over a five year period, with the goal that they be replaced by captive-bred birds, both foreign and domestic. Where imports of wild-caught birds would continue to be allowed for captive breeding purposes, the CWGBT recommended that federal import controls be strengthened and streamlined (CWGBT, 1990).

The CWGBT realized that quantitative information on captive breeding by private aviculturists in the U.S. was virtually non-existent. To address the information void, TRAFFIC USA, WWF’s international wildlife trade monitoring program, initiated a survey to: 1) assess the current and potential ability of private aviculture in the U.S. to fulfill the pet bird industry’s demand for captive-bred birds; and 2) determine what factors are inhibiting or contributing to the growth of private aviculture in the U.S.

A pilot survey of aviculturists was distributed at the American Federation of Aviculture (AFA) annual convention in 1989. The purpose of the pilot survey was to determine whether aviculturists might participate in a more comprehensive survey of psittacine captive breeding. Although only 135 aviculturists participated in the pilot survey, over 18,000 birds were documented. More importantly, over 85% of the respondents indicated they would be willing to participate in a more comprehensive psittacine captive breeding survey. The success of the 1989 effort, published in AFA Watchbird (Allen et al., 1990, inspired the larger, more comprehensive 1990 CBS.

**Methods**

The CBS was limited to psittacinies (order Psittaciformes) because they are commonly imported for the pet trade, and because harvest for the pet trade threatens many wild populations. Except for two questions specific to them, budgerigars (Melopsittacus undulatus) and cockatiels (Nymphicus hollandicus) were specifically excluded from the CBS because they are well established in captivity and their husbandry is well known.

The CBS consisted of a two-part survey form: a questionnaire and a

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Readers are cautioned to remember that the questionnaire and census results represent only those aviculturists who responded to this CBS. This sample of aviculturists may or may not be representative of the entire aviculturist population in the United States. The return rate was positive for a first psittacine captive breeding survey. Over 80 percent of the completed surveys were submitted by AFA individual members responding to the survey form they received in the mail. Three percent of the surveys were returned from AFA affiliated clubs.

Responses to the CBS came from all 50 states, Puerto Rico, the U.S. Virgin Islands and even two foreign countries (Note: information from the two foreign countries was not included in the results presented here). State totals ranged from 1 to 254 respondents. California and Florida had the most respondents with 254 and 132 respectively. Arizona and New York had 64 respondents each, while Texas and Pennsylvania had 47 and 46 respectively. In the Northwest, Washington had 54 respondents and Illinois led the Midwest with 39.

The questionnaire portion of the survey was designed to gather information on modern avicultural practices involving psittacines and the aviculturists who keep them. The results of the questionnaire are summarized in the TRAFFIC USA report, from which this article was excerpted. This article summarizes only the results of the census.

Results and Discussion

TRAFFIC USA received 1,221 completed survey forms. Assuming that the survey form reached 15,000 to 20,000 people, the return rate was 6 to 8%. Considering the varied means by which the survey form was distributed and the unknown number of aviculturists in this country, the return rate was positive for a first psittacine captive breeding survey.

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population of aviculturists in the U.S. It must also be noted that the census numbers presented here represent a minimum figure for the number of species and number of birds in U.S. private aviculture today. Therefore, any generalizations based on census data must be viewed with caution. And because we do not know the total number of aviculturists in the U.S., we cannot extrapolate the numbers obtained in this census to the U.S. as a whole.

Collection sizes varied from 1 to 951 psittacines. Over 40% of all collections contained less than ten birds. Not surprisingly, 75% of the respondents with fewer than ten birds described themselves as pet owners. Owners of larger collections were primarily breeders and commercial breeders.

In terms of both the total number of species and the total number of birds recorded, the 1990 Psittacine Captive Breeding Survey represents the most comprehensive data set gathered to date on captive breeding of psittacines. The census recorded 31,008 birds from 183 species in 1,183 collections. Table 1 presents important totals from the census.

### Table 1 — Census Totals

<table>
<thead>
<tr>
<th>Census Category</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total species in census</td>
<td>183</td>
</tr>
<tr>
<td>Total birds in the census</td>
<td>31,008</td>
</tr>
<tr>
<td>Total wild-caught birds</td>
<td>15,196</td>
</tr>
<tr>
<td>Total captive-bred birds</td>
<td>12,595</td>
</tr>
<tr>
<td>Total unknown origin birds</td>
<td>3,191</td>
</tr>
<tr>
<td>Total tax-producing offspring (species and subspecies)</td>
<td>192</td>
</tr>
<tr>
<td>Total set-up breeding pairs</td>
<td>11,259</td>
</tr>
<tr>
<td>Total eggs hatched in 1989</td>
<td>17,277</td>
</tr>
<tr>
<td>Total chicks weaned in 1989</td>
<td>14,887</td>
</tr>
</tbody>
</table>

The number of chicks weaned is 2,400 lower than the number of eggs hatched. This does not necessarily mean that those birds died. They simply might have left the breeders' collections prior to weaning. Any future census should ask for the number of weaned and unweaned birds that left the collection for the pet or breeder market. This would give a more accurate picture of the numbers of captive-bred psittacines that are entering the U.S. market.

Table 2 shows that six of the nine species groups in the census were fairly evenly represented, the exceptions being lories, pionus and parrotlets.

### Table 2 — Numbers of Birds in the Census, by Species Group

<table>
<thead>
<tr>
<th>Species Group</th>
<th>No. of Species</th>
<th>Total Birds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amazons</td>
<td>23</td>
<td>3,900</td>
</tr>
<tr>
<td>Macaws</td>
<td>14</td>
<td>4,100</td>
</tr>
<tr>
<td>Conures</td>
<td>27</td>
<td>4,300</td>
</tr>
<tr>
<td>Parrotlets</td>
<td>3</td>
<td>300</td>
</tr>
<tr>
<td>Pionus</td>
<td>7</td>
<td>650</td>
</tr>
<tr>
<td>Cockatoos</td>
<td>16</td>
<td>4,000</td>
</tr>
<tr>
<td>Lories</td>
<td>21</td>
<td>780</td>
</tr>
<tr>
<td>Lovebirds</td>
<td>7</td>
<td>3,500</td>
</tr>
<tr>
<td>Parrots</td>
<td>30</td>
<td>6,000</td>
</tr>
<tr>
<td>Others</td>
<td>35</td>
<td>3,470</td>
</tr>
</tbody>
</table>

Table 3 lists the 25 most abundant species in the census, along with the number of respondents holding each species, the source of the birds and each species' 1989 reproduction.

Import data show that 12 of the 25 most abundant census species were also among the top 20 import species (Mulliken and Thomsen, 1990). In fact, 8 of the top 10 census species were among the top 15 imports. One obvious conclusion of these comparisons is that there may be many more wild-caught birds of these species in this country than appear in the census. Thus, there is probably a large gene pool available to aviculturists interested in breeding these species.

Macaws, *Ara ararauna*; Moluccan Cockatoos, *Cacatua moluccensis*; White Cockatoos, *Cacatua alba*; and Double Yellow-headed Amazons, *Amazona ochrocephala oratrix* represent a broad range of geographic origin, size, color, vocalization ability and price, but have one trait in common—they are all popular pet birds.

The No. 1 species in the census (Peach-faced Lovebird) was not among the top 20 imports. Only 13,042 Peach-faced Lovebirds were reported imported during 1984 - 1988, a yearly average of 2,608. A high percentage of the Peach-faced Lovebirds documented by the census were captive-bred (91%). Breeding data for 1989 show that 4,049 total young were hatched (4.8 young per breeding pair). Thus, it seems logical to conclude that aviculture has been breeding the Peach-faced Lovebird for some time (at least the last five years), and that captive breeding may be providing a substantial segment of the pet trade's demand for this species.

The No. 2 species in the census (African Grey Parrot) is the No. 3 import. Interestingly, most birds in the census originated in the wild (76%). The species' 1989 breeding data show that 799 total young were hatched (1.1 young hatched per breeding pair). A conclusion perhaps warranted from these data is that the African Grey Parrot is a popular species in the pet trade but aviculturists only recently have begun breeding it for the commercial trade. Thus, the majority of the demand is still being filled by wild-caught birds.

The No. 3 species in the census (Blue and Gold Macaw) was also not among the top 20 imports. Some 8,167 Blue and Gold Macaws were imported during 1984 - 1988, a yearly average of 1,633. About 30% of the birds documented by the census were captive-bred and 1989 breeding data show that 630 total young were hatched (1.6 young per breeding pair). Thus, it appears that aviculture has been breeding Blue and Gold Macaws for some time and that captive breeding is providing an increasing segment of the pet trade's demand for these species.

The No. 4, 5 and 6 species in the census rank in the second ten on the imported species list. The Moluccan Cockatoo and the Double Yellow-headed Amazon, although present in many collections, do not appear to be bred in great numbers (.5 young hatched per breeding pair of Moluccan Cockatoos, .75 young hatched per breeding pair of Double Yellow-headed Amazons). In fact, less than half the Moluccan Cockatoos and Double Yellow-headed Amazons in the census were in breeding pairs. This could be attributed to the relatively large number of respondents who held these species as pets.

Two additional factors may be contributing to the lower reproductive success of Moluccan Cockatoos and Double Yellow-headed Amazons. First, the reproductive needs of these two species are not widely understood by aviculturists, resulting in greater breeding failure among the pairs that are set up for breeding. A second factor could be that the large number and lower cost of wild-caught birds imported for the pet trade has discouraged aviculturists from working with these species (including smuggled birds like the Double Yellow-headed Amazon). If these two species are to remain available for the pet trade, aviculturists will have to improve and increase their captive breeding.

Unlike the Moluccan Cockatoo, the White (Umbrella) Cockatoo had relatively higher breeding (1.4 young...
hatched per breeding pair). Aviculturists note that this species produces young consistently and that many pairs are being bred in order to help fulfill the strong demand for these birds in the pet trade.

It is interesting to note that 8 of the top 20 imported species (Mulliken and Thomsen, 1990) are not represented among the top 25 census species. Apparently these species, Mitred Conure (Aratinga mitrata), Blue-crowned Conure (Aratinga acuticaudata), Grey-checked Parakeet (Brotogeris pyrrbopterus), Red-masked Conure (Aratinga erythrogenys), Orange-winged Amazon (Amazona amazonica), Canary-winged Parakeet (Brotogeris versicolurus), Peach-fronted Conure (Aratinga aurea), and Red-irored Amazon (Amazona autumnalis), are not as abundant in aviculture as other psittacines (that is, if census results are an accurate reflection of U.S. aviculture). Possible explanations for why these commonly imported species are not more abundant in the census are: 1) they are difficult to breed, 2) legally and illegally imported wild-caught birds are so cheap that there is little incentive to breed the species in captivity, or a combination of 1 and 2.

Table 4 provides census data on 21 species which are listed on Appendix I of CITES, seven of which are also listed as either threatened or endangered under the U.S. Endangered Species Act (ESA). Similar to Table 3, the species with the greatest numbers of individuals and highest overall 1989 production of young are those species considered popular both among aviculturists and in the pet trade: the Scarlet Macaw (Ara macao), Military Macaw (Ara militaris), Hyacinth Macaw, and Moluccan Cockatoo. High census numbers for some of these species can be attributed to their relatively recent inclusion in Appendix I; wild-caught imports have been available until rather recently (e.g., Moluccan Cockatoo added to Appendix I in 1990). Other species appear to be abundant in the census because they are relatively easy to breed in captivity (e.g., Scarlet Macaw).

The relatively few ESA and Appendix I species (21 of a potential 52 species) in the census suggests several possibilities. First, some respondents may not have included information on their ESA and Appendix I species in the census. Second, many of the species could have very small populations in captivity. There may be relatively few coordinated breeding programs for these species, and where they do exist, few aviculturists may participate in them. Third, these species are not popular as pets.

Census data appear to show that demand from the pet market determines which ESA and Appendix I species are being captive-bred in good numbers. However, this could be due to the poor availability of these species rather than any lack of interest in breeding them or keeping them as pets. An important contribution aviculturists can make at this time is to increase the production of ESA and Appendix I species that are popular in the pet and breeder trade.

Conclusions

The 1,221 completed survey forms received by TRAFFIC USA represents what can only be described as an unprecedented response. In terms of both total number of species (183) and total number of birds recorded (31,008), the 1990 Psittacine Captive Breeding Survey represents the most

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The results of the census confirm that U.S. aviculturists maintain a wide variety of species in their collections, from very common to very rare, and that aviculturists are breeding many species quite successfully. The breeding information further indicates that the species being bred most commonly are those that are popular as pets and have been imported in large numbers in the last five years. Uncommon or rare birds in captivity are generally held by breeders and collectors who have an interest in the genus as a whole. These species are more accurately known as avicultural birds because they are most popular among aviculturists and not pet owners.

It appears that as long as a species remains popular in the pet trade, its survival in captivity seems assured. Continued and, in many cases, increased captive breeding of birds by private aviculturists to supply the demands of both the pet and breeder trades is important. Threats to many wild populations can be reduced by lowering the demand for wild-caught birds in the pet trade.

The census suggests that at least eight popular pet species are not being bred in large numbers in captivity (remember that the census is a minimum estimate!). It will be important for aviculture to increase its production of these species, especially if wild-caught imports for the pet trade are gradually phased out.

What is to be the future of unpopular or uncommon species in aviculture? If the variety of psittacine species present in this census is going to be maintained in captivity, aviculturists will have to become better coordinated to share the limited genetic material available in the rare birds. Breeding rare or endangered species has little value for the survival or viability of captive populations unless that breeding is part of a well-managed, coordinated, captive breeding program.

The fate of many psittacine species in the wild, such as the Hyacinth Macaw and the Green-cheeked Amazon, will be decided in the coming decade. Aviculturists will play a critical role in that fate, and it is up to individual aviculturists to help ensure that the fate is survival. Now is the time for aviculturists to take constructive actions toward ensuring the survival of psittacines in the wild and in captivity. Keeping good collection and breeding records and participating in regular captive breeding surveys will help provide aviculturists with the necessary information to more effectively breed birds and take the necessary actions toward maintaining species in captivity.

TRAFFIC USA wishes to thank all the AFA members who participated in this precedent-setting 1990 Psittacine Captive Breeding Survey. While the CBS has provided important new information for the avicultural and conservation communities alike, it represents just one season of breeding results and therefore has limited usefulness in assessing trends in aviculture and the pet bird industry. Additional CBSs are needed to better understand the status of captive breeding by U.S. aviculturists. Accordingly, TRAFFIC USA is planning to conduct a 1991 Psittacine Captive Breeding Survey using a revised survey form based on the many valuable comments submitted by this year's respondents.

TRAFFIC USA depends, however, on continued support from the aviculture community to make the 1991 CBS a success (85% of the respondents indicated a willingness to participate in future CBSs). The continued support of those people is crucial, both in completing another survey form and encouraging others to do so as well. It is our hope that aviculturists breeding psittacines will make a second national captive breeding survey even more successful than the first!

Editor's note: This article has been excerpted from a TRAFFIC USA report, "Results of the 1990 Psittacine Captive Breeding Survey." Copies of the full report are available from TRAFFIC USA. If you would like a copy of the report and have not already requested a copy, please write: TRAFFIC USA/World Wildlife Fund; 1250 Twenty-fourth Street, NW; Washington, DC 20037; Attention: Catherine Allen.

References