

Prepared for the 1994 CITES CONVENTION

The American Federation of Aviculture (AFA) is an organization for aviculturists, people who keep and raise exotic birds (non-native species), from finches to parrots, doves and softbilled birds. The AFA consists of individual members and of over 250 affiliated bird clubs with their members. The AFA was formed in March 1974 in southern California and now is a national organization with a Board of Directors composed of five principal officers and regional vice-presidents. The AFA is a non-profit, 501(c)3, service organization which produces a bi-monthly journal, the *AFA Watchbird*. Also, the AFA hosts an annual four-day convention which presents speakers on avicultural,



veterinary and conservation topics.

The primary mission of the AFA is to promote aviculture: the keeping and breeding of avian species. The AFA supports conservation projects involving avian species, supports research on avian nutrition and diseases and monitors local, state and federal laws and regulations dealing with avian species.

The business office is located at 3118 W. Thomas Road, Suite 713, Phoenix, Arizona 85017-5308. Individual membership is \$24 a year. For information contact AFA, P.O. Box 56218, Phoenix, AZ 85079-6218 or call (602) 484-0931, Fax (602) 484-0109. ●

The Role of Private Aviculture in Bird Conservation

Conservation and aviculture: do these two words even belong together in a sentence? For most of its history, aviculture connoted, at best, the breeding of birds for profit. At its worst, aviculture is associated with poor breeding practices (such as inbreeding), instances of poor husbandry and abusive conditions, and the capture of wild birds, either for breeding or for sale. In some instances, bird collectors have even hindered conservation efforts. When pleas went out for the 26 collectors who are believed to own Spix's Macaws to donate or lend their birds for breeding, many refused to admit they owned the birds. Others simply refused. As none are held by zoos and they are probably extinct in the wild, it may be impossible to begin a captive breeding program (Frank, 1992). No wonder conservationists had little good to say about the pet bird industry.

Today, pet bird ownership is on the rise. With this increase has come an increasing awareness of conservation on the part of bird breeders, sellers and owners. Through publications reaching

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over 200,000 readers, organizations such as the American Federation of Aviculture (AFA) have steadily focused attention on conservation issues such as the status of various wild populations, habitat loss, and the need to prevent the trade of wild-caught birds (Clubb, S. 1992). One popular magazine, *Bird Talk*, carried no articles about conservation during its first three years of publication (88-90). Since then, partially in response to reader demand, the magazine regularly features articles about endangered species.² The AFA also assists conservation efforts directly by distributing surveys to members at conferences (Allen and Johnson 1992) and in its *Watchbird* magazine. For example, the October/November 1993 issue carried a survey from the American Zoological and Aquarium As-

sociation (AZA) Passerine Taxon Advisory Group about the ownership and breeding of passerines. The AFA conventions feature leading conservationists such as Don Merton. He gave two talks at the 1993 meeting the first on the application of avicultural techniques to save the Black Robin, the other on efforts to save the Kakapo. Ulysses Seal spoke at this year's International Aviculturalists Society meeting, as did Rosemary Low and Dr. Carlos Yamashita, of the Brazilian Ornithological Society. The AFA has also made direct financial contributions to conservation of the Bali Mynah, Bahama Parrot and other bird species through its Conservation Small Grants Fund.

Concern is developing into action. This paper examines two formal programs for bird conservation involving private aviculturalists, along with some of the informal and indirect contributions of private aviculture to conservation breeding efforts. Private aviculture is defined as the for-profit sector to distinguish it from other private efforts, such as the

International Crane Foundation, The Peregrine Fund, Loro Parque on Tenerife, Canary Islands, Spain and the World Parrot Trust.

Unfortunately, the cases discussed in this paper are not representative of the gamut of private avicultural conservation programs. They *are* the gamut.³ It has taken some time to develop even a minimal level of trust and respect between avicultural and conservation groups. There is a tendency on the part of conservation groups to overlook the potential contribution of aviculture. Many conservationists fail to realize that many private breeders are dedicated, sincere, professional, ethical and highly skilled at husbandry and breeding. In many cases, private breeders are far more successful at managing their stock and in bird production than are trained professionals at zoos (Tudge 1992). At the same time, breeders are wary of conservation groups, partially because conservationists still loudly declaim the pet trade as the primary cause of wild bird population decline (certainly a valid charge in some cases, but there is also a failure to recognize how hard the pet industry is working to change this situation), and partially because of concern that conservation organizations will impose too many rules and try to prevent the sale of birds.

In addition to the myriad contributions of aviculture to bird conservation, there is one significant factor that can not be overlooked. Private breeders offer cage space that is unavailable elsewhere. All the zoos in the *world* comprise an area the size of Brooklyn, New York. William Conway of the New York Zoological Society (Bronx Zoo) and a member of the Wildlife Conservation and Management Committee (WCMC) of the AZA estimates that at best, all the zoos in the world could support breeding programs for 900 species of animals (luoma 1987). With 150 North American bird species threatened to some degree (Erlich et. al., 1992), it is painfully obvious that institutional breeding programs do not have enough room to propagate the vast majority of birds endangered worldwide. Unlike large mammals, birds do not require a great deal of space or expensive enclosures. Most private breeders conduct their activities in ordinary houses. Even aviaries for those species which are colony breeders do not

require a large space and can be built with inexpensive materials.

Of the approximately 170 species managed in controlled captive breeding programs in North America through the AZA Species Survival Plan (SSP), only 16 are bird species. Private breeding has the potential to add significant numbers of bird species to the captive breeding conservation effort through available cage space. As an added bonus, the expansion in conservation breeding will not tax the already strained institutional financial resources.

The caveat, of course, is this: private programs must operate subject to the same standards and practices as institutional breeding programs such as the SSP. The two cases examined in this paper serve as exemplary models.

The Cuban Amazon Consortium (CAC)

In 1989, Ron Johnson, curator of birds at the Miami Metrozoo, was asked to submit a proposal to the Wildlife Conservation and Management Committee (WCMC) of the AZA, suggesting the formation of a breeding consortium for Cuban Amazons, *Amazona leucocephala*. The need for this proposal originated with the seizure of 42 birds by the United States Fish and Wildlife Service. The birds had been housed since the seizure at the Miami Metrozoo. On 7 December 1990, the birds were released to the AZA Clearinghouse Committee (a cooperative project of the USFWS and the AZA to place seized wildlife). The consortium goal was to manage these birds in a SSP-type program. As with all SSP's, the members signed a contract agreeing to adhere to certain husbandry standards, dietary and medical protocols, necropsy protocols and, most importantly, a breeding plan designed to preserve allelic diversity and heterozygosity. The founding stock consisted of birds seized by the United States Fish and Wildlife Service on 4 April 1988. Miami Metrozoo contributed two juveniles raised in its aviaries. The CAC holds title to the USFWS birds. Half the offspring of the consortium birds belong to the CAC; half belong to the breeder. Regardless of ownership, no bird can be transferred without approval of the Management Committee and all birds must be transferred to other CAC members.

Unlike other SSP programs, the CAC

invited and encouraged the participation of private breeders. All members were screened for experience, facilities and other qualifications and institutional members and private breeders were required to adhere to the same standards. Of the 84 applicants, 68 were private breeders (individuals and aviaries). Over two thirds of those selected to participate are private breeders.

By 1991, the CAC was up and running. In its 1991-1992 report to the AZA Conservation and Science office, CAC reported that the studbook application had been submitted to WCMC for approval, plans to develop husbandry guidelines and the Master Plan (outlining the actual breeding strategy) were underway, efforts to bring new members and additional birds (from private owners) had commenced, and the birds were breeding! In 1992, the CAC suffered a setback when Hurricane Andrew devastated the Miami Metrozoo, destroying much of the correspondence of the management group. In June, 1993, E. Trent Swigert of the Avicultural Breeding and Research Center (ABRC), a private commercial aviary, became chairman of the CAC.

The AFA Red Siskin Project (RSP)

Unlike the CAC, with its institutional provenance, the AFA Red Siskin Project consists entirely of private breeders (with one exception - The Milwaukee County Park Zoo). This truly remarkable program has made great strides towards increasing the captive numbers of this distinctive red and black Venezuelan finch. The wild population may be as low as 100 individuals. Habitat destruction and the pet trade, which bred the siskin to canaries to produce a red canary, are largely responsible for this decline. The RSP began in 1982, when the Venezuelan Audubon Society asked the AFA to assist in propagation of the siskin.

Kevin Gorman, the coordinator of the AFA Red Siskin Project and a panel of volunteers (including an aviary curator from the University of Wisconsin - Stevens Point Department of Biology, a doctor in Dallas and his wife, a psychologist, and a wildlife biologist) administer the program. Many more are hobbyists. Some have never bred birds before, although the panel does screen the applicants. In

fact, most experienced breeders declined to join the RSP. Gorman theorizes that they were not willing to participate without some financial reward, and were reluctant to have protocols imposed upon them. Gorman is preparing a husbandry manual and a feeding protocol. Veterinary and necropsy protocols are already in place.

The RSP now has 200 birds in its breeding population. Orland Baker, M.D., maintains a studbook using SPARKS software. Although there is no formal master plan, allelic diversity and heterozygosity are the breeding goals.

In 1991, Luis Baptista of the California Academy of Sciences made song sonograms from recordings of Red Siskins owned by the RSP. The song pattern analysis will be used to study song learning in young siskins. The recordings will also be used to compare the captive-raised birds' songs with recordings of wild siskins.

Recently, Gorman learned that huge collections of Red Siskins exist in Europe, perhaps as many as 100,000 individuals. As many as 50% of these birds are hybrids, as the breeders crossed them with another siskin subspecies to produce larger, more cold-tolerant birds. Gorman hopes to interest European aviculturists in an organized breeding program.

Most recently, RSP has been working with BIOMA (the Venezuelan Nature Conservancy) and other conservation groups to try to establish protected areas for the current wild population and for possible reintroduction. He believes the Venezuelan government will set aside two such areas. Although detailed reintroduction plans are far in the future, Gorman has noted that the captive-raised siskins seem to retain their flocking behavior - a good harbinger for reintroduction.

Informal and Indirect Contributions of Aviculture to Conservation Breeding

The single most important indirect contribution of aviculture to conservation is the development of extensive husbandry and management techniques. Private aviculturalists have achieved the first captive breedings of many birds species (Thompson 1989). Rosemary Low, speaking in defense of captive breeding at the 1988 meeting of the International Council for Bird Preservation's

parrot Specialist Group stated:

"the expertise and experience of aviculturalists - most notably private individuals - has provided a fund of knowledge which would have and in some cases has been invaluable to government-funded researchers involved in the captive breeding of endangered species. Too often zoo personnel with no knowledge of the genus concerned, field workers or biologists have been chosen to manage captive breeding programs. While I have the utmost admiration for the work they do, their place is in the field or the laboratory. When a field worker is expected to assume the role of an aviculturist, the result is he or she learns the basics of aviculture on some of the world's most highly endangered species. Years of time are lost and birds die in the process. All too often such people have been totally without knowledge of aviculture and apparently lacking the wit or wisdom to consult those who were successful in breeding species closely related to those with which they were working."

Aviculturalists make their expertise available in a variety of ways. They speak at conferences, and publish the proceedings of those conferences. They publish in various magazines. ABRC recently published a book entitled *Psittacine Aviculture*, designed to benefit private breeders as well as veterinarians and zoo curators (advertisement).

Another significant contribution of aviculture is veterinary medicine. Largely as a result of the growing popularity of pet birds and the consequent growth of aviculture, the Association of Avian Veterinarians has grown as more veterinarians choose to specialize in avian medicine (Worell 1989). Until very recently, very few veterinarians had much experience with birds. In fact, until 1993, there were no standards and no accreditation process for those who chose to specialize in avian medicine. AAV has now instituted a testing requirement for those who claim such expertise. Given the risk of introduced infections during reintroduction into the wild, the achievements of avian veterinarians, who have developed vaccines for Pacheco's Disease (Gaskin 1989) and intensive, continuing research into avian tuberculosis, psittacine beak and feather disease, polyomavirus and psittacosis are critical to the success of reintroductions.

Finally, there are the individual breeders who choose to breed endangered bird species. They do so for purely altruistic reasons, achieving reward from the propagation of these rare species. They often derive no financial benefit. Don Rietz, a Phoenix, Arizona breeder does sell birds. However, with 16 Vasa Parrots, Rietz is the second largest breeder of the 50 or so who breed this rare Madagascan bird in the United States. Another private breeder of Vasas, Dave Blynn, has compiled studbooks for both the Greater and Lesser Vasa species (Blynn 1992).

Conclusions

Conservation and private aviculture need one another. Private conservation groups and zoos don't have the money and space to do it all. Private aviculture needs the rigorous controls of the structure established by the conservation groups. The pooled expertise of the two further increase the prospects of survival for the world's endangered bird species.

Then, too, there is one more compelling reason to make private aviculture a mainstream component of bird conservation. Private aviculture is not going to go away. Therefore, as Devra Kleiman said of animals in zoos "as long as we have [animals like giraffes and Golden Lion Tamarins in zoos for people to see], we might as well do something even more useful with them," (Cohn 1988).

If aviculturists continue to do something more useful, as are the RSP and the CAC, then the time may come when conservation will regard aviculture as a respected and valuable partner.

Endnotes

- 1 It is a relief to report that this situation has been changing. According to Natasha Schischakin, conservation coordinator at the Houston Zoo, "We have gone well past the point of people denying they have the birds and refusing to participate in a captive-breeding program. I believe nearly all the big players are cooperating now. They understand that this is the last chance for the species. If they do not cooperate, then basically, the blame would fall on them..." (Vaughan 1993).
- 2 These articles are *not* limited to endangered species that are also in the pet trade. For example, in the July 1991 issue of *Bird Talk*, Rosemarie Gnam wrote of her field studies of the Bahama parrot, *Amazona leucocephala bahamensis*.
- 3 Actually, there are other examples of cooperative efforts between private breeders and conservation groups. ABRC donated ownership

its 30 Thick-billed Parrots, *rhynchopsitta pachyrhyncha* to the State of Arizona, although it continues to maintain and breed the birds in its own facilities. It also accepts confiscated Thick-billed from USFWS which are added to the breeding population (Anon., PR Newswire 1990). ABRC is a member of the Thick-billed Parrot SSP. ABRC has also provided funding and birds for reintroduction of Military Macaws, *Ara militaris mexicana* in Guatemala. This program was a joint venture by ABRC and the Interamerican Tropical Research Foundation, and received funding from WWF, Bird Clubs of Virginia, the Miami Parrot Club, and the Central Alabama Avicultural Society (Clubb, K. 1991).

Sources

AAZPA Cuban Amazon Consortium Files:
Correspondence, Committee Report,
Breeding Consortium Agreement

Advertisements:

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Cohn, Jeffrey P., "Captive Breeding for Conservation" *Bioscience* 38(5):312-316 (May, 1988).
Erlich, Paul R., Dobkin, David S., and Wheye, Darryl, *Birds in Jeopardy*, Stanford University Press 1992:ix.
Frank, Jacequeline, "Bird Collectors Ignore Pleas to Save Rare Macaw" Reuters June 16, 1992.
Gaskin, Jack M., D.V.M., Ph.D., "Vaccines for Aviculture" *The A.F.A. Watchbird* CITES Issue (Fall 1989): 41-42.
House, Ruth Ann "Beyond Birdhouses: Feathered Pleasures Multiply With a Backyard Aviary" *The Phoenix Gazette* April 16, 1993: Page E1.
Gnam, Rosemarie S., "The Bahama Parrot - Then, Now and Forever" *Bird Talk* 9(7): 36-44 (July, 1991).

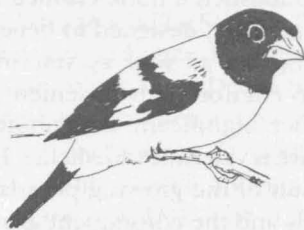
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Johnson, Ronald E., "Cuban Amazon Consortium" in Wiese, R. J., Hutchins, M., Willis, K., and Becker, S., eds. AAZPA Annual Report on Conservation and Science, Bethesda, Maryland, American Association of Zoological Parks and Aquariums, 1992.
Low, Rosemary, "Captive Breeding of Threatened Neotropical Parrots" *The A.F.A. Watchbird* CITES issue (Fall 1989): 31-35.
Luoma, Jon R., *A Crowded Ark*, Houghton Miffling 1987:68
Swiger, E. Trent, "Cuban Amazon Breeding Consortium" in Wiese, R. J., Willis, K., Bowdoin, J., and Hutchins, M., eds., AZA Annual Report on Conservation and Science, Bethesda, Maryland, American Association of Zoological Parks and Aquariums, 1993.
Tudge, Colin, *Last Animals at the Zoo*, Island Press 1992; pp. 247-250.
Vaughan, Don, "The Spix's Macaw: On the Brink Extinction," *Bird Talk* 11(10): 26-30 (October, 1993).
Worell, Amy, D.V.M., "Avian Medicine in '89" *The A.F.A. Watchbird* CITES Issue (Fall 1989): 42-43. ●

The Red Siskin Project

Being extremely popular with cage-bird enthusiasts worldwide, the wild Red Siskin *Carduelis cucullatus* is rapidly approaching extinction due to continued illegal trapping. In 1982, a scientific study conducted by Coats estimated that only 300 to 400 pairs remained in the wild. Ten years later, an estimate by Venezuelan officials placed the number of birds at under 50.

A request was made by the Venezuelan Audubon Society in 1985 for the AFA to help them preserve their beautiful vermilion-red native finch. It was agreed that the Red Siskin was a good model bird for a nationwide, AFA endangered species breeding program because it is illegal trapping for the pet trade, alone, that has pushed this little finch toward the brink of extinction. This was an excellent opportunity for aviculturists to correct the "wrongs" of the past.

After many years of planning, the first birds were bred by AFA Red Siskin Project (RSP) breeders in 1990.



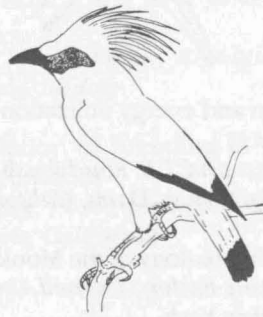
Every year since, the numbers of offspring produced by RSP breeders have been increasing. The Red Siskin Project has a multifold goal: 1) to give private aviculturists the opportunity to participate in preserving an endangered species by expanding the number of birds in captivity by maintaining genetic diversity, monitoring and eliminating disease, and holding the captive population as a backup to supplement the wild population; 2) to act as a catalyst for further field studies on wild Red Siskins and habitat with concrete steps taken to increase the population in the wild; 3) to educate native people on the plight of this species; 4) to serve as a model system for private aviculture showing that the private sector can work together both

nationwide and worldwide toward a common goal of breeding an endangered bird for conservation of the species.

You may join the AFA Red Siskin Project at several levels. **Level 1: Red Siskin Project Breeder**, after approval of your application, you are given birds to work with. All young are maintained in the AFA Red Siskin Project. **Level 2: Associate RSP Breeder**, if you have your Red Siskins already, you may join the project and donate a portion of your young to the project, or we may send you birds on breeder loan with the understanding that the young are distributed between yourself and the Project. **Level 3:** with an annual donation of \$50 you can become a "friend of the siskin" and receive a free T-shirt and the Siskin News newsletter.

For further information and application, write or call the American Federation of Aviculture, P.O. Box 56218, Phoenix, AZ 85079-6218, phone (602) 484-0931. ●

Listing of Projects Receiving AFA Conservation Fund Grants From 1987 - 1993



- Breeding biology of the Mariana Crow
Principle Investigator: Gary A. Michaels

- Development of a field-based propagation program for the Hispaniolan Trogon
Investigators: Steve Amos, Ken Reininger, Jose Ottenwalder, Jack Clinton-Eitniear and William Hasse

- Breeding biology of the Bahama Parrot
Principle Investigator: Rosemarie Gnam

- Conservation of the Java Hawk-eagle
Principle Investigators: Sebastianus Van Balen, Robin Chancellor

- Status and conservation of the Cape Parrot in southern Africa
Principle Investigator: Andre Boshoff

- Determination of preferred habitat characteristics of Ocellated Turkeys in Tikal National Park, Guatemala
Principle Investigator: Maria Jose Gonzales Fuster

- Tropical Andes film project
Principle Investigators: Megan and Greg Epler Wood

- Ecology, breeding biology and conservation of the Yellow-shouldered Amazon on Margarita, Venezuela
Principle Investigator: Kirsten M. Silvius

- Preliminary study on the impact of Hurricane Gilbert on the psittacine population of Yucatan
Principle Investigator: Joann M. Andrews, president, Pro-Natura, Yucatan

- Macaw conservation in Belize and Honduras, Central America
Principle Investigator: Michael Kreger

- The use of starch-gel electrophoresis to access the degree of genetic variability in a captive population of Socorro Doves
Principle Investigator: Luis F. Baptista

- Natural history of the El Oro Parakeet *Pyrrhura orcesi*
Principle Investigator: Sergio Lasso

- Cooperative breeding and habitat utilization by the Toucan Barbet *Semnornis rampbastinus*
Principle Investigators: Carla Restrepo and Marta Lucy Mondragon

- Campaign for the preservation of the Seven-colored Tanager *Tanagara fastuosa*
Principle investigator: Maria Tereza Jorge Padua

- Assessing the status of Madagascar's endemic land birds
Principle Investigator: Michael S. Putnam

- Determination of the status of the Glaucous Macaw and Hyacinth Macaw in Argentina and Paraguay
Principle Investigator: Dr. Manuel Nores

- The genetics of the Puerto Rican Parrot *Amazona vittata*
Principle Investigator: M. Kelly Brock

- Support for the Centro para la Conservacion de los Psitacidos Mexicanos
Principle Investigator: John Ehbrenberg, M.D., Sc.D., Merida, Mexico

- Conservation of Madagascar birds
Principle Investigator: Michael S. Putnam

- First workshop of the management and conservation of macaws in Mesoamerica
Principle Investigator: Sherry Thorn, ICBP/Honduras

- Project to study incubation of the Ocellated Turkey *Agiocharis ocellata* using the Common Turkey *Meleagris gallopavo*
Principle Investigator: Jobanna Motta Gill, Tikal National Park, Guatemala

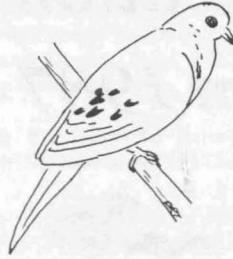
- Captive breeding of the Southern Ground Hornbill *Eucorvus cafer*
Principle Investigator: Eugene Marais, National Zoological Gardens, Pretoria, South Africa

- Halfmoon Conure Breeding Consortium
Principle Investigators: Susie Vaught and Gary Clifton, Arizona Seed Crackers Society Conservation Project

- Post-release behavior and movements of the Bali Mynah in Balie Barat (second field season)
Principle Investigators: Mark Collins and Thomas B. Smith, Ph.D., Department of Biology, San Francisco State University

- Tracking of seasonal movements of the Great Green Macaw in the Atlantic rainforest of Costa Rica and Nicaragua
Principle Investigator: Dr. George Powell, RARE ●

Summary of Research Proposals Funded by AFA From 1982 - 1993



1982...

- Estimation of the population parameters of the Green-cheeked Amazon *Amazona viridigenalis* in northeastern Mexico

J. Clinton-Eitniear, McAllen, Texas

- Seasonal evaluation of excretory sex steroid hormones in juvenile psittacines; non-invasive applications to a functional appraisal of sexual identity of mature birds

A. Bercovitz, San Diego Zoo, San Diego, California

- Detection of *Chlamydia psittaci* infection in exotic birds

J.M. Gaskin, University of Florida, Gainesville, Florida

- Development and efficacy of a live budgerigar fledgling disease virus vaccine for use in breeder budgerigars *Melopsittacus undulatus*

P.D. Lukert and R.B. Davis, University of Georgia, Athens, Georgia

- Solid food requirements and water tolerance of cockatiel chicks from hatching to five weeks of age

C.R. Grau and T.E. Roudybush, University of California, Davis, California

1983...

- Breeding biology of the Bahamas Parrot *Amazona leucocephala bahamensis*

R. Gnam, City University of New York, New York

- Exogenous factors affecting the natural population *Amazona viridigenalis* and a determination of its natural diet

J. Clinton-Eitniear, McAllen, Texas

- Lysine requirement of cockatiel chicks

C.R. Grau and T.E. Roudybush, University of California, Davis, California

- Follow-up study on psittacine papovavirus funded in 1982

P.H. Lukert and R.B. Davis, University of Georgia, Athens, Georgia

1984...

- Protein and energy utilization of Amazon parrots

C.R. Grau and T.E. Roudybush, University of California, Davis, California

- Breeding biology of the Monk Parrot

Dr. Steven Emlen, Cornell University, Ithaca, New York

- Development and validation of egg waste estrogen analysis in rare and endangered psittacine species — applications in neonates for sex identification and non-invasive assessment

A. Bercovitz, San Diego Zoo, San Diego, California

- Nutritional requirements of budgerigars through their lifecycles

D. Polin, Michigan State University, East Lansing, Michigan

- Cryogenic preservation of budgerigar semen

T. Hargrove, Florida Atlantic University, Boca Raton, Florida

1985...

- Vitamin A stores and onset of hypovitaminosis A in cockatiels and parrots

C.R. Grau and T.E. Roudybush, University of California, Davis, California

- Artificial incubation temperature requirements of cockatiel eggs

U.R. Abbott and B.A. Cutler, University of California, Davis, California

- Environmental control of reproduction in cockatiels

J.R. Millam, University of California, Davis, California

- Handling and disturbance stress in captive psittacines

K.T. Patton and W.C. Crawford, Raptor Rehabilitation and Propagation Project, Eureka, Missouri

1986...

- Use of doxycycline and chlortetracycline medicated avicake for treating chlamydiosis (psittacosis) in Orange-winged Amazon Parrots

Dr. K. Flammer, North Carolina State University, Raleigh, North Carolina

- The influence of selected adjuvants on the humoral immune response of Umbrella Cockatoos *Cacatua alba*

J.M. Gaskin, University of Florida, Gainesville, Florida

- Incidence and host specificity of toxoplasmosis in canaries

Dr. K. Flammer, North Carolina State University, Raleigh, North Carolina

- Calcium requirement of egg production in cockatiels

C.R. Grau and T.E. Roudybush, University of California, Davis, California

- Feeding biology of the Bahama Parrot *Amazona leucocephala bahamensis* during the breeding season

R. Gnam, American Museum of Natural History, New York, New York

1987...

- Congo-red binding in *Escherichia coli* isolated from the cloaca of psittacine birds

Dr. K. Flammer, North Carolina State University, Raleigh, North Carolina

- The efficacy of various disinfectants against certain psittacine viruses

Dr. J.M. Gaskin, University of Florida, Gainesville, Florida

- Treatment of psittacosis in cockatiels with chlortetracycline medicated seed diet

Dr. K. Flammer, North Carolina State University, Raleigh, North Carolina

1988...

- The influence of selected adjuvants on the humoral immune response of Umbrella Cockatoos *Cacatua alba*

Dr. J.M. Gaskin, University of Florida, Gainesville, Florida

- Phase III - Psittacine Beak and Feather disease investigations

Dr. B.W. Ritchie, University of Georgia, Athens, Georgia

1989...

- Potential use of Enrofloxacin (Baytril) for treating psittacosis in psittacine birds
Dr. K. Flammer, North Carolina University, Raleigh, North Carolina

- Gonadal response to gonadotropin releasing hormone

Dr. J. Millam, University of California, Davis, California

- Development of a nonradioactive genomic probe for diagnosis and study of Psittacine Beak and Feather disease

Dr. B.W. Ritchie, University of Georgia, Athens, Georgia

- Development of an immunoperoxidase test to diagnose Psittacine Beak and Feather disease

Dr. K.S. Latimer, University of Georgia, Athens, Georgia

1990...

- Potential use of doxycycline medicated corn and soy bean feed to treat Chlamydiosis in psittacine birds

Dr. K. Flammer, North Carolina University, Raleigh, North Carolina

- Use of DNA probes for the detection of subclinical carriers of the PBFV virus in breeders' aviaries

Dr. B.W. Ritchie, University of Georgia, Athens, Georgia

- Effect of dietary iron on the accumulation of iron in the liver of European Starlings

Susan Crissey, Ph.D., Brookfield Zoo, Brookfield, Illinois

- Stimulation of breeding in Orange-winged Amazons

J.R. Millam, Ph.D., University of California, Davis, California

1991...

- Endocrine response of Orange-winged Amazons to photostimulation

J.R. Millam, Ph.D., University of California, Davis, California

1992...

- Hematology and serum biochemical analysis of wild-caught Amazons in Guatemala

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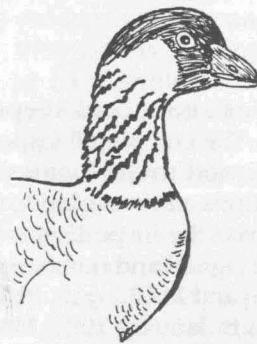
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Conservation, Captive Breeding, CITES

by Alister B. McNabney
Chair, AFA CITES Committee

Wild birds are in trouble. Of the approximately 9,000 avian species throughout the world, almost 1,000 of them are in danger of extinction. Large numbers, probably in the thousands, are in a threatened status and could become actually endangered within a few years. CITES has an obligation to take all possible steps to protect these avian species. How difficult that task will be remains to be seen.

Significant evidence exists to suggest that when human beings give serious attention to an endangered species by establishing a sufficient number of the birds in captivity, the species may be "saved." The downward spiral in a species' numbers can often be reversed by incorporating some of the endangered birds in a captive breeding program. Many



examples exist, including most of the pheasant species, numerous psittacines, some cranes, raptors, passerines and others.

An effective captive breeding plan has a much greater chance of success if it is begun *before* the actual number of individuals in the species falls below a critical point. A broad variability in the gene pool is very desirable

for a foundation stock. The California Condor program is an example of letting the bird's population fall to almost impossibly low numbers before beginning a serious captive breeding attempt. Only through heroic efforts and good luck has this program gotten under way at all. And the effects of a tiny gene pool will not become manifest for many years.

The Congress of the United States enacted the Wild Bird Conservation Act of 1992 (the general purposes of which are supported by the American Federation of Aviculture) which will clearly alter some of the issues CITES has to deal with. The "taking" of wild birds for the U.S. "bird trade" will virtually cease. There are, however, hundreds of species *not* involved in the bird trade but which are nonetheless considered endangered or threat-

ened. What can be done to enhance the survival of these species?

In a 1989 article entitled "Protection of Avian Species Through Aviculture," Gary Lilienthal wrote on behalf of the AFA, "... it is the author's hope and desire that swift and decisive action may be taken to alleviate conditions which inhibit captive breeding without sacrificing the very protection of avian species in international trade for which CITES exists." Perhaps this suggestion should also apply to species that are *not* in the trade.

The California Condor, for example, has never been a bird "in the trade," yet its very existence is due to captive breeding. Many of the problems associated with bird trade have diminished with the real lessening of traffic in birds but there are still those species that are on the brink, even though

trade has never been an issue with them. They should not be ignored.

A number of benefits have accrued to the various avian sciences that can be attributed (directly or indirectly) to aviculture. They include an overall broadening of avian knowledge, the rise of a cadre of veterinarians specializing in the treatment of exotic birds, the development of exotic avian medicine and research in several major universities, increased funding for avian field studies, the development of a specialized body of knowledge (courtship, breeding, nesting, incubation, diet, etc.) for some captive birds that has been virtually impossible to get in the field, and, of course, an increased population of some species that were in serious decline or have actually become extinct in the wild.

Jonathan Fink, AFA's CITES ob-

server in 1992, wrote in the *AFA Watchbird* Dec/Jan 1992, "With the continued destruction of the world's tropical forests and increased size of the human population, more and more bird species are becoming critically endangered. Safeguarding these birds and ensuring their survival until the pressure of their habitats are [sic] relieved will require the skill and knowledge of aviculturists in cooperation with field biologists and wildlife management authorities in developing nations. The American Federation of Aviculture and its members are committed to addressing all the problems surrounding the bird trade in order to achieve a secure future for our avian companions."

Clearly, aviculture as conservation is no longer just a promise. It is a reality. ●

The Model Aviculture Program

by Laurella Desborough
Martinez, California



Overview

The Model Aviculture Program (MAP) was designed to improve avicultural practices through setting basic standards of care and having veterinarians inspect facilities to determine the level of care. MAP certification is provided for the individuals who meet those standards. The MAP is a non-profit service organization, not a private business. It is governed by a Board of Directors comprised of aviculturists and avian veterinarians who guide the organization and generate policies under which the certification program is administered. The MAP is not only designed to establish excellence in avicultural practices, but to provide information to aviculturists. Applicants to the program receive a set of guidelines and instructions on preparation for the inspection process. MAP applicants send a completed application with a fee to the MAP office, which sends a numbered NCR inspection form and guidelines to the veterinarian of the applicant's choice. The veterinarian inspects the

facilities and record keeping procedures. The completed inspection form is returned to MAP and processed. Questions are weighted. Applicants who pass the inspection are provided with a signed and numbered MAP certificate and MAP logos. Planning MAP began in January 1985. MAP was formally established in 1990 and began accepting and processing applications in January 1991.

MAP Background, National Cage and Aviary Bird Improvement Plan

In 1981, the United States Animal Health Association (USAHA), at its annual meeting, added other avian species to its Committee on Trans-

missible Diseases of Poultry, which then became the Committee on Transmissible Diseases of Poultry and Other Avian Species. A resolution was made to establish a subcommittee to prepare a model state program for pet birds. Thus, the National Cage and Aviary Bird Improvement Plan (NCABIP) was born.

Starting MAP, January 1985

Aviculturists in northern California attended a poultry association meeting on pet birds where Marshall Meyer of PIJAC presented the information on NCABIP in the fall of 1984. In January 1985, the first meeting organized by aviculturists was held to discuss NCABIP. It was determined that aviculturists should design a model improvement plan for aviculture.

A group of aviculturists began holding monthly meetings where the pros and cons of NCABIP were studied and discussed. From the beginning, avian veterinarians were included in the discussions as resource persons. The

exotic bird concerns of the agriculture community, the U.S. Fish and Wildlife Service and of the Center for Disease Control were addressed. It was determined that these concerns should be met in the design of the plan. The needs and requirements of the many species of birds kept in aviculture were discussed, from finches to pheasants and from macaws to soft-bills. Recognizing that the many species have different housing and dietary needs and that different methods are utilized for rearing progeny, the MAP planners determined not to create a large book of detailed specifications on each species. Noteworthy in regards to the decision was the recognition that the specific practices in aviculture in the U.S. vary greatly according to the different geographic regions. In addition, within the same geographic area, avicultural practices may vary greatly and still result in high productivity. Since modern avicultural practices are still in a formative stage, rather than being completely defined, it seemed reasonable not to establish species-specific caging and dietary requirements. These determinations resulted in the use of a simplified approach, i.e., the design of models of husbandry practices which were to be applied to any species in any location.

Key Elements of MAP

Using models for husbandry practices involving the areas of quarantine, safety systems, caging, nutrition, nursery and record keeping made a great deal of sense. Guidelines were designed to provide instruction on each area within the aviculturist's facility. Using these models of avicultural husbandry practices is a key element of the Model Aviculture Program.

The second key element of the MAP is the veterinarian as inspector. The veterinarian who performs the inspection of the bird farm facilities and record keeping system imparts the authority of a state licensed professional to the MAP process. Avian veterinarians have helped design the Model Aviculture Program. Their medical experience and knowledge has provided the needed complement to the experience and knowledge of the aviculturists in designing a program that is effective and useful.

The third key element of the MAP is the utilization of the closed aviary

concept. Avicultural facilities utilizing the closed aviary concept have an effective means of disease control. Implementing the closed aviary concept in the daily work of the facility provides the aviculturist with a means to secure and maintain flock health, to isolate and control disease outbreaks in flights or in the nursery and, thus, to reduce losses and achieve production goals. Applying the principles of the closed aviary concept to avicultural husbandry practices lays the foundation for a successful bird farm.

Exotic Bird Farms

An exotic bird farm may consist of a few aviaries in the backyard, a few cages in a room or basement, or a separate building housing many flights. Aviculturists representing each of these examples have made application to and become certified by MAP. The goals of these individual aviculturists, or bird farmers, are quite varied. Some individuals are working with small collections of very rare and expensive birds. They wish to maintain these birds in good health and, perhaps, ultimately to have these birds reproduce. Youngsters might be sold or traded. Although income from these birds is important, it is not the only goal. Conservation of a rare species is a goal. Other aviculturists have very large farms with hundreds of pairs of birds. These farms are production-oriented with the goal of raising hundreds of healthy chicks destined for the pet market. Other aviculturists have small backyard aviaries where they produce a few youngsters every year; their goal is to enjoy their birds and to earn some money to cover their expenses. Some aviculturists combine an interest in conservation of rare or unusual species with an interest in income-producing birds. Although the goals of these individual aviculturists may vary, the success of their facility depends upon their implementation of good avicultural husbandry practices and the closed aviary concept.

The Closed Aviary Concept

A complete understanding and correct application of the closed aviary concept is essential to the successful bird farm. Implementation of this concept requires defining separate areas within the facility, each with a distinct location. These areas are as follows.

Quarantine Area: the area where all new birds are housed for a period of time to determine their condition of health through observation and appropriate testing. The quarantine area should be serviced last each day. **Breeding Area:** adult breeding stock is housed in species-appropriate set-ups so that production of eggs or young is enhanced. **Nursery Area:** the nursery area is where young are fed and raised when not being parent-raised. Nurseries may vary according to type of species being raised, i.e., a waterfowl or pheasant nursery would require a different set-up than a nursery for psittacine chicks. The nursery is potentially a high risk area for disease outbreaks. **Isolation Area:** an area where sick or injured birds can be kept apart from the breeding collection and the nursery. This area must be separate from the quarantine area. **Food Storage and Supply Area:** food storage, preparation and wash areas may be combined. Planning and monitoring traffic flow between each area in the facility is the critical element in preventing and controlling disease transmission.

The Veterinarian's Role in MAP

The Model Aviculture Program provides for facilities inspections performed by licensed veterinarians in each state. Placing the MAP inspection process in the hands of veterinarians means inspection by unbiased professionals. The integrity of the MAP program rests upon the integrity of the individual veterinarian performing the inspection. Of course, for the inspection process to be successful, the veterinarian will need to be informed about avicultural husbandry practices and the closed aviary concept. The veterinarian will also need to be flexible in approach to the various types of facilities and record keeping. The inspection process involves the veterinarian reviewing the guidelines and inspection form prior to the inspection. Upon arrival at the facility, the veterinarian will need to observe the record keeping procedures and paperwork to see that the system is functional, to review the traffic flow at the facility, to walk through the facility, and to complete the inspection form. The veterinarian leaves a copy with the client, keeps a copy for his/her files, and sends the original inspection form to MAP. Inspection forms are processed by the MAP staff

and those who pass receive a signed, numbered certificate indicating compliance with MAP standards.

The Three Levels of MAP

MAP has been designed to have three levels of participation. Level 1 is the basic inspection and certification of facilities for any species in any region. Meeting the basic standards of Level 1 means the participant has planned and implemented a management program for the breeding aviary, the nursery, the hospital, the quarantine area, the food preparation and storage and record keeping. The Level 1 participant has met basic standards of care and husbandry for the species at the facility.

Level 2 participation in MAP is reserved for those aviculturists who have completed at least one year of MAP Level 1; have over two years of avicultural experience with the species at the facility; and have scored above 90 points on their second inspection.

Level 3 participation in MAP is

reserved for those participants who are in conformance with Level 2 certification and wish to obtain (1) wild-caught, rare and/or endangered species in trades/purchases, (2) birds available from U.S. government confiscated birds, or (3) birds imported as part of a specific cooperative breeding program under the Wild Bird Conservation Act of 1992. Applicants for MAP Level 3 submit a resumé of their avicultural history, including production records and the length of time they have been working with the endangered (Appendix I) or threatened (Appendix II) species or a closely related or similar species. The resumé shall be accompanied by photos of the facilities, information on the regional location with notation of ambient winter and summer temperatures and other relevant conditions. Applicants for Level 3 must provide two letters of recommendation from aviculturists in good standing in the avicultural community; these letters are to provide supporting information on the applicant's experience.

A MAP for the Future of Aviculture in the U.S.

MAP has been endorsed by the Board of Directors of the American Federation of Aviculture as a viable program for inspection and certification of aviculturists. MAP has the active support of several major zoos, including the San Diego Zoo, which only permits the sale of surplus zoo birds to private sector individuals who are certified MAP participants. MAP was presented to the leadership of World Wildlife Fund which recognized MAP as a valuable program in the conservation of birds. MAP has been presented to the U.S. Fish and Wildlife Service Office of Management Authority as an organization designed to improve captive breeding of birds in the U.S.

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Red-fronted Macaw Management and Recovery Project

by Laurella Desborough, President
American Federation of Aviculture

In keeping with the AFA tradition of providing support for conservation projects, it was decided that AFA embark on a much larger and more comprehensive conservation project involving the Red-fronted Macaw of Bolivia. This three-to-four-year project focuses on a bird that: 1) is believed to have been adversely affected by trade in the past; 2) may be in danger of becoming rare in the wild; 3) has been imported in large numbers into the U.S.; and 4) is commonly bred in the U.S. These circumstances provide us with the opportunity to research the macaw in the wild and in captivity. The AFA plans to conduct a model conservation management program that involves the work of field biologists, aviculturists and members of the public in the country of origin. The project will be conducted in three phases. Phase I: initial site visit to



Bolivia. Phase II: a team of field biologists survey the entire range of the macaw and conduct a survey of the macaws in captivity in the U.S. and Bolivia. Phase III: review results of field work and surveys and determine whether or not captive breeding in Bolivia will be needed. Determine what sites used by the macaws need protection. Determine what means

would involve the local peoples in protecting their Red-fronted Macaws.

Phase I Completed

In the summer of 1994, Drs. John O'Neill and Leticia Alamia traveled in Bolivia to survey the habitat and population status of the Red-fronted Macaws which inhabit broad valleys now used for agriculture. These valleys are bordered by hills and mountains covered with dry forest and cacti, with broad rivers running through their centers. The macaws nest in sheer cliffs rising directly out of the rivers. The macaws routinely visit the fields of new corn and peanuts and forage on the ground.

Previous Studies

An early study done on this macaw was published as a part of a larger

study on South American Psittacids by Ridgely in 1981. Further work was published by Lanning in 1982. The most complete report was done by Clarke and co-workers in 1991. Further work was done by Pitter and Christiansen (in press) 1991-92. An in-depth study was done by Marc Boussekey, a French zoologist, in 1991. He studied a population of 60 birds in October-November 1990. At present, there is very little land used by the Red-fronted Macaws that is under any sort of protection. There does not seem to be a management plan for the land.

Project Goals

1. To determine the past and present population status of the Red-fronted Macaws.

2. To ascertain whether or not the population is presently lower than it

was before birds were trapped for trade.

3. To determine whether or not the bird is truly endangered or threatened.

4. If appropriate, to formulate and carry out a plan for recovery, including land-use planning and management as needed for recovery.

5. To carry out an educational campaign to instill local pride in the macaw.

6. To develop local programs that will allow the people to benefit monetarily from having the macaw in their valleys and protecting it.

Project Steps

1. Survey the entire range of the Red-fronted Macaw and gather data on seasonal movements and interactions with local people.

2. Complete a survey of captive birds both in and outside Bolivia,

including collecting physical data for later genetic research.

3. Upon completion of the surveys and review of the data, a decision will be made concerning the advisability and feasibility of initiating a captive breeding program in Bolivia.

4. With the information obtained from habitat surveys, work can be initiated to obtain protection for critical nesting and roosting sites.

5. Develop land-use plans and management plans for the macaw in concert with Bolivian biologists and officials of the wildlife agencies of the government.

6. With completion of data collection and analysis, the project will be turned over to Bolivian counterparts, with foreign counterparts available for consultation. AFA may continue working with certain parts of the project over the long term. ●

Born in Adversity, Devoted to Captive Breeding and Conservation

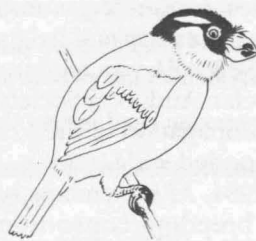
VVND! To an aviculturist, one might just as well yell "fire!" This was particularly true in the early 1970s. Avian medicine, disease prevention and cure had not advanced to the state of the art we know in 1994. So, when two outbreaks of Exotic Newcastle Disease occurred in California in the 1970s, the scene was almost sheer panic.

By August 1972, a total embargo on importation of birds was imposed by the United States government. That embargo was to last over one year (September 1973). U.S. government workers sought out aviaries throughout southern California. Aviary birds were exterminated in large numbers. Bird losses mounted as aviculturists stood helplessly by. Complaints about the basis for and the extermination methods being used, as well as the evidence on which the exterminations were based, found few sympathetic ears among government workers.

Bird Losses, Dollar Costs Were High

It has been estimated the two out-

by Alister B. McNabney



breaks of VVND (Velogenic Viscerotropic Disease) in the early 1970s cost \$56 million. There was more to come. Hundreds of aviary and pet birds were summarily exterminated. No hearings, no chance for appeal. One day, an aviculturist would have an aviary filled with healthy, important birds. The next moment, a U.S. government representative would arrive at the aviary door. Shortly thereafter, the aviary birds were dead, exterminated. All that was left of years of work were some memories, a lot of anger and a determination to "do something!"

In September 1973, the government established 18 quarantine stations in

California. That wasn't enough. Within a year, there were 90 fully operative quarantine stations in California. Then an attack was opened on another front. The California legislature became the battleground. Legislation was introduced. The effect (had it been made law), a ban on birdkeeping in the state. That specific piece of legislation was "killed," but aviculture was to be confronted with still another try. January 1974 saw a revival of the legislation to "ban" the birds. At about the same time, the U.S. Department of the Interior produced another "bad" bird containment effort.

Aviculture Begins to Unite

Many aviculturists realized the very serious nature of the threats to aviculture and their birds. The Board of Directors, South Coast Finch Society, moved to join forces with other bird groups to create a united opposition to the efforts being made to "do in" aviculture. By 1974, 20 years ago, the American Federation of Aviculture became a struggling reality. In those early, rather dismal times, some in the

avicultural world just couldn't believe "the government" could or would take actions that would be so destructive to avian conservation, birds and an activity so beloved by "bird people." Determined, involved individuals, in the American tradition, refused to "give up."

Jerry Jennings, AFA's first president, was very active. He testified against the proposed California legislation, visited bird clubs, individual aviculturists, legislators and key government people, talking about the serious nature of governmental actions aimed at aviculture and its future.

Jennings was a key figure in creating AFA's Articles of Incorporation. Other initial officers included Lee Horton, Gary Aalfs, Russ Sutton, Frank Kozeleh, Charlotte Bartke and Catherine and Michael Cunningham. Other major contributors to the formation of AFA include Joe Crosby, Don Dinning, Joe Griffith, Hal Koontz, Chuck Noble, Dick Mattice, Mickey Ollson and Janice Pritchard.

What Next for AFA and Aviculture?

Extensive effort produced names, addresses of bird clubs, individual aviculturists, prospective members and AFA's membership grew. Money for AFA's activities came in the form of \$10 contributions. A simple, one page, bi-weekly publication was proof that AFA was "in business." The AFA *Watchbird*, now a hallmark of AFA's progress and activity, was published (8 pages of black and white with information relevant to the then current situation) in August 1974. Early editorial staff included Sheldon Dingle and Jean Hessler. These two are still active key members of the *Watchbird's* editorial staff. Membership, a key to AFA's progress, grew slowly.

Another outbreak of the dread Exotic Newcastle Disease in 1977 again brought home the importance and need for aviculturists to work together. By so doing, they could better present their views, protect their birds and maintain a viable aviculture in California and elsewhere. AFA created special supplemental publications that dealt with the government's bird eradication program. That experience thrust the AFA into national view and membership grew.

AFA's first national convention was held in San Diego. These popular

annual conventions have since been held in cities throughout the United States in communities ranging from Phoenix, Arizona to the 1994 event in Knoxville, Tennessee. Each convention has been organized to educate, entertain and produce new ideas, ideas that have been designed to stimulate avicultural interest in bird lovers from the neophyte bird person to the experts. Special seminars present highly knowledgeable speakers who discuss the latest information about veterinary medicine applicable to birds. All sorts of bird related vendors display their wares; well-written books that deal with all aspects of aviculture are on sale. Specialized bird diets, sometimes very original, are available. More and more innovative ideas have been presented at the AFA conventions each year and a number of successful efforts have occurred including:

- 1979 saw the successful culmination of five years of efforts by AFA to change regulations affecting captive-bred endangered species.

- In 1980, a "hot-line" was established to the U.S. Department of Agriculture and the U.S. Customs to cooperate in the effort to halt the flow of smuggled birds. AFA has encouraged people to report smuggling operations.

- In 1981, AFA began allocating funds for research grants in avian medicine, nutrition and field studies.

- In 1982, AFA was requested by the Venezuelan Audubon Society to assist in the propagation of the Venezuelan Black-hooded Red Siskin.

- In 1984, AFA members helped set up the breeding consortium for the confiscated Black Palm Cockatoos and ensured that the birds would be distributed in pairs.

- In 1985, AFA and its members strenuously objected to the U.S. Department of Agriculture's proposal to permit the import without quarantine of birds bred in certain closed facilities outside the United States. The proposal was withdrawn by the USDA.

- In 1985, AFA was recognized by the U.S. Department of Agriculture and mentioned in the *1985 Yearbook of Agriculture* as the leading organization of bird breeders. AFA was also commended by the Technical Assistance Office of the federal government as the "grass roots" organization for

the saving of endangered species by captive breeding.

- In 1991, AFA launched a major campaign against smuggling. The campaign included production of a video tape public service announcement, a special poster to be distributed along the border and a meeting of AFA officials and law enforcement personnel in Washington, D.C.

In 1984, AFA established a working relationship with the World Wildlife Fund. That relationship led to a major avian-directed conservation effort. Essentially, all major conservation organizations, led by the World Wildlife Fund, moved to develop avian conservation legislation. The effort and idea was fully and actively supported by AFA. These organizations created the Cooperative Working Group to develop legislation designed to conserve avian species in the wild. The rather heroic, idealistic effort failed. Eventually, the U.S. Congress produced the Wild Bird Conservation Act of 1992. That Act is now the law of the land. AFA, the U.S. government and others are working on and/or are watching implementation of that law.

From 1975 to 1994, AFA has many important avian related accomplishments to its credit such as over 25 conservation projects funded by the AFA Conservation Fund and over 40 research projects funded by the AFA Research Fund.

Where We Are Now

Twenty years of life, activity and concern for conservation of avian species. That's the record AFA has established. AFA's captive breeding work has produced important knowledge about birds, their habits, diets, breeding, nesting, hatching. Important advances have been made in avian medicine. A broad understanding has been achieved that conservation of avian species is necessary and achievable. That understanding includes the importance of habitat or, if habitat is destroyed, that captive breeding can be a major force in "saving" avian species from extinction.

Current AFA conservation activity calls for study of endangered species in the wild and under captive breeding conditions. AFA supports the expectations that captive bred, endangered species will (when feasible) be returned to areas where it was once at home. ●