

4. Alaska Population Data. L. G. Swartz found that out of eight Peregrine sites, only one hatched an egg. These eight sites were all interior river sites. There were various reasons for the failures. Pesticide residues in Peregrines were found to be 100-1,000 times more concentrated than in indigenous (non-migratory) Alaskan species. He mentioned that Cade had found sea-coast Peregrine reproduction to be on the low side of average but not really low. He also mentioned Cade's finding dead young in the nest, which is unprecedented. This seems to plug into pesticides affecting the nervous system and habitual actions in brooding and feeding of the young. Swartz found a 16.8% decrease in egg shell thickness when he compared eggs from the pre-pesticide period (before 1947) with those of 1968. He noted that three tundra eggs measured by Streater were even thinner than the ones he had measured and that on the north slope three eggs taken by Weaver showed 27% thinning.

Cade (by Olendorff) reported on the Yukon. There is a suggestion of a Peregrine trend toward unsuccessful pairing since 1966. He found 2-3 week-old nestlings dead from starvation or freezing. The parents were in the vicinity of the nest but were not caring for the young. This is possibly the result of steroid hormone abnormality caused by chlorinated hydrocarbons.

Discussion: Swartz--polyphenyl bichlorides may prove to be troublesome compounds also. Porter--not much is known about these compounds from the literature. Dead young in nests may not be a result of parental behavioral abnormality as suggested by Cade. Rather, as White believes, it may be the result of weather.

5. Queen Charlotte Islands. W. Nelson reported on this area. He felt the estimate in Hickey's book of 80 pairs was optimistic. A census for pairs of birds revealed only 43, or, if single birds were assumed to be paired also, then there were 60 pairs.

Nelson reported that Langara Island, with a 25 mile circumference and 16 nest sites, contained 12 pairs of Peregrines in the late 1950's. In 1966 it held 9 pairs; in 1967, 7 pairs; in 1968, 5 pairs and one single; and in 1969, 4 breeding pairs. Two of these last four pairs contained an immature female and a mature male each. The females showed little territorial impulse. There were no eggs or young. He stated that eggs appear to flush DDE, DDT, etc., out of females. Males appear to retain their concentrations of these compounds. Dry weather and brittle shells may be killing chicks.

6. Other Raptors. F. Hamerstrom reported on Harriers. She noted an absence of male Harrier nuptial flights since 1964. Nest guarding is no longer common. Dead young are being found in nests. Birds present on a 40,000 acre study area decreased from 317 in 1960 to 28 in 1968, but increased to 40 in 1969. Eggs and young produced has dropped from 70 to 10. Nests dropped from 25 in 1963

to 2 in 1969. More subadults are now breeding--50% in 1969. Hamerstrom showed a correlation of the vole population with the Harrier population. She was not sure if voles were low in pesticides or if something in the voles aided Harrier reproduction. She also noted that Harriers seem to imprint to an area by having young there. Pairs who fail to reproduce in an area do not return to it.

C. L. Boecker (by R. Fenley) reported on Golden Eagle populations in New Mexico, Texas, Colorado and Wyoming. Populations are essentially unchanged or increasing (in one area).

Enderson reported on DDT and DDE analyses from Prairie Falcons in the Colorado region.

7. Other Research. R. D. Porter reported on research at Patuxent. He showed slides of their breeding pens for Kestrels and Peregrines. Food and food preparation for the birds was also described. Pesticide studies on the Kestrels were discussed. He felt that hepatic enzyme induction in thin shells was not the complete answer, although it is part of it.

T. Ray reported on egg shell thickness. Sixteen hundred Prairie Falcon eggs from various museums were examined for his study. He noted that egg collectors have at times used pepsin to digest egg contents. Since this would also digest the shell membrane, discrepancies could result. He had examined 14 Prairie Falcon nests in the Colorado Springs area and found 4-5 eggs per nest. About the same number hatched. The big discrepancy was between the number reaching advanced nest age and the number which actually fledged. There was a large increase in deaths between these two ages. He also found a reduction of the shell thickness of Prairies along the eastern slope of the Rockies in Colorado.

8. Discussion Session (D. Graham, B. Mattox, R. Olendorff presiding). The general theme of the discussion was the plight of the Peregrine and what falconers, scientists and other interested persons can do about it. A wide variety of topics were discussed. A majority of the time was devoted to the following resolutions, which were passed. It was hoped that NAFA and RRF would ratify these resolutions. Graham felt that federal and academic endorsement were essential for the breeding project's success.

Resolution 1: Whereas careful research has proved that hard pesticides, particularly DDT, are a serious pollutant of the environment, and

Whereas these pesticides are clearly among the most, if not the most important factor in causing a decline of the peregrine falcon population and that of some other raptorial birds, and

Whereas these birds are not only an important recreational and esthetic resource, but they constitute an important ecological warning of environmental contamination, now therefore

Be it resolved that the conferees at the 1969 NAFA Peregrine Symposium in Fort Collins, Colorado, urge in the very strongest terms that DDT and other persistent pesticides be legally banned for manufacture, use and sale domestically and abroad, and that this resolution be transmitted to the Secretaries of Agriculture, Interior, Health, Education and Welfare, the National Association of Agricultural Chemical Manufacturers and other pertinent individuals and organizations.

Resolution 2: Be it resolved that the conferees at the 1969 NAFA Peregrine Symposium in Fort Collins, Colorado, strongly support the endangered status of the North American peregrine, and recommend Federal regulation pertaining to the taking of peregrines on the basis of regional populations.

Resolution 3: Elements of a Management Plan for the Peregrine Falcon in North America.

1. Assumption of Federal responsibility for the conservation of the species in both the United States and Canada, and preferably in Mexico and other Latin American countries, if such can be arranged, is recommended. Since the most effective international program of protection and management for the species would result from a treaty or treaties, the United States should be urged to take the initiative in developing treaties which include the peregrine and all raptors.

2. It is recommended that individual states, provinces and territories share the responsibility of the enactment of appropriate legislation where this is not already in effect. It is clear that unless the states, provinces and territories are involved, as well as the Federal governments, law enforcement would be ineffective, since the Federal governments have so few personnel. An arrangement similar to that used for waterfowl in which the states, provinces, territories and the Federal governments cooperate should be helpful. NAFA could offer its services to the various governments in the development of appropriate model laws.

3. A greatly stepped up program of research on all aspects of peregrine biology, with the Federal governments taking the initiative, is suggested, but providing that funds also be available for contracts for research by (preferably) teams of non-government scientists who have proven interests and capabilities.

4. A large scale program of experimental research and breeding in captivity should be instigated. Research on peregrine biology should involve participation of any individuals or organizations which have demonstrated skill and interest in rearing the peregrine or closely related species. The efforts should not be concentrated only in such a center as Patuxent. We congratulate Patuxent for taking the initiative, but recommend that other organizations and individuals also be considered where well-qualified persons are available.

5. In developing the management program, the Federal, state, provincial and territorial agencies should recognize that populations in different geographic regions differ in the environmental

stresses which they are facing and in the degree of their response to these stresses. Management plans should be developed regionally to recognize these differences. (Note Resolution 2.)

6. Of particular importance in the research program will be continuing long range studies of the nature and degree of human disturbance in the environments occupied by the peregrine and other raptors, as indicated on the breeding grounds, migration routes and wintering areas. Such disturbance of the environment includes not only pesticides, but technological developments such as those expected to accompany the exploitation of Alaskan oil fields.

7. Where needed, sanctuaries should be declared where any human disturbances should be prohibited, as have proved successful for other threatened species such as the Whooping Cranes and Trumpeter Swans.

8. Because the peregrine is difficult to study, and because other species of raptors have also shown similar responses to environmental stresses, it is suggested that both the research program and the management program be broad enough to include other selected species.

9. In the development of the management program the tremendous historical, social and recreational value of falconry should be recognized and provided for even though restrictions upon falconry may be required in the future, until the peregrine population trend has been improved. Falconers should be recognized as one of the most important sources of pertinent information and interest in the conservation of the species. In research and development of a management program falconers should be consulted and their efforts employed.

Resolution 4: A Plan for Regulating the Removal of North American Peregrines from the Wild.

The following are a series of proposals which, if operated together, would provide a reasonably practical way of controlling the take of peregrines for use in falconry, breeding projects and for scientific purposes. That some plan, covering all North American peregrines, be implemented in the near future seems imperative in view of the dwindling southern population and reports of lowered reproductive performance in arctic peregrines in at least three regions.

I. Authority. An interim committee would assume responsibility for determining the number, age and locality of peregrines to be taken into captivity for any purpose and will set qualifications for applicants. The committee would have the following structure: One person from the National Park Service, one from the North American Falconers' Association, one from Raptor Research Foundation, Inc., two from the Canadian Wildlife Service, one from the British Columbia Fish and Wildlife Branch, one Alaskan representative and two from the Bureau of Sport Fisheries and Wildlife. The body would issue a permit by lottery to qualified applicants based on guidelines assuring reasonable competence in keeping peregrines in captivity. Upon receipt of a copy of the permit, the appropriate licensing agencies would issue a license to capture birds in a specified locality.

II. Licensing Agency. The United States Fish and Wildlife Service, Bureau of Sport Fisheries and Wildlife, and the Canadian Wildlife Service would be the logical licensing agencies; the authority of at least the former may rest in existing Federal statutes. Approximately 20 states and 4 provinces are of interest, since they include the regions where peregrines can be captured. All states, provinces and territories with regulations regarding peregrines will be urged to honor Federal permits.

III. Localities. The authority group would determine on the basis of population density and productivity, the number of birds and the localities from which peregrines can be taken, e.g., Alaska, Yukon Territories, Northwest Territories and British Columbia would allow a predetermined number of nestlings to be taken; Maryland, North Carolina, Florida, Texas and Wisconsin would allow a certain number of migrants to be taken.

IV. Identification of Permitted Birds. All birds taken under permit and license would be identified by lock-on United States Fish and Wildlife Service bands. Birds already in captivity must be fitted with a band. This would be a responsibility of the owner. Banded captives can be transported or exchanged if accompanied by the permit to capture. The band is supplied to the permittee with the permit.

V. Procedure for Obtaining Peregrines. (1) Apply by letter to authority group; state locality desired and qualifications, assuring reasonable care of the bird. (2) Send copy of permit to game department under whose jurisdiction the bird will be taken to obtain clearance. Pay fee; receive license. (3) Obtain bird or birds and take it directly to regional office or representative of the above mentioned game department for placement of band or bands and verification signature by a departmental representative.

VI. Distribution of Information. The authority group would annually advise all interested agencies, including game departments, falconry groups, research organizations and conservation groups with an account of its decisions and activities.

VII. Other Possibilities. The above plan could be easily expanded to cover other raptors where demand is high compared to the productivity of the species, especially the prairie falcon and perhaps the gyrfalcon.

Resolution 5. In recognition of the endangered status of *Falco peregrinus*, we recommend that the Federal regulatory agencies endorse the development of independently operated facilities for the purpose of creating a self-sustaining captive Peregrine Falcon population. The long range goals of these facilities would be: (1) development and dissemination of avicultural methodology pertaining to the peregrine or similarly threatened raptors, (2) preservation of the peregrine through eventual re-establishment into its natural breeding ranges, and (3) propagation of falcons for recreational falconry.

Resolution 6. Be it resolved that a committee is hereby appointed to construct a detailed proposal for model peregrine population facilities such as was recommended by Resolution 5 of this symposium.

Be it further resolved that this committee be chaired by Donald V. Hunter, Jr., of Raptor Research Foundation, Inc., and that the other members shall consist of R. A. Graham, one recognized biologist, one member of the United States Bureau of Sport Fisheries and Wildlife and one member of the North American Falconers Association.