

TRAINING IN SMALL POPULATION BIOLOGY AND CBSG PROCESSES



भारतीय वन्यजीव संस्थान
Wildlife Institute of India



The Wildlife Institute of India hosted a unique Training Workshop which combined the teaching of principles of Small Population Biology with the teaching of tools of Organisation and Group Dynamics which are used in planning CBSG Processes.

CBSG Processes are nothing more or less than the P.H.V.A. and C.A.M.P. Workshops which are organised now all over the world and of which seven (6 PHVAs and 1 CAMP) have been done in India.

These Workshops, which involve assessments of single species and their habitats, or several sub-species of the same species and their habitats, or even a broad range of taxa, are called the CBSG Processes because very specific techniques are used both for organising these Workshops and for running them. These techniques involve systematic steps for organisation and principles of group dynamics and group psychology.

Dr. U. S. Seal, Chairman, Conservation Breeding Specialist Group, has developed these Processes in collaboration with CBSG members and associates all over the world after working and observing interaction in the field of wildlife. Seal felt that the failure of many well-meaning and otherwise good conservation initiatives was primarily due to factors such as territoriality, ego-based habit patterns, dog-in-the-managerism, differences between theorists and practitioners and other such elements.

Seal has a background in psychology and experience in small group work as well as other sciences, so he ventured into a great experiment in combining conservationists from all different fields and agencies in workshops with scientific objectives governed by principles of group psychology. The result of this experiment has been phenomenal.

Seal has assisted the zoo community first by developing a records system which encouraged and enabled zoos to keep track of parentage and much other information. A seminal article by Ralls and Ballou virtually proved the inbreeding in captive wild animals caused birth defects which gave a more scientific impetus to the movement toward cooperation between zoos in exchanging animals. Parallel progress and development in the science of conservation biology, including the use of models to assess and predict events, the maturation of the science of small population biology, including research on inbreeding in wild animals led to the strategy of interactive management of zoo and wild animals.

Using zoo animals or even wild animals in doomed populations interactively to strengthen or save other threatened populations is not simple or easy. It requires communication, cooperation, and collaboration of the highest order from many individuals, institutions and agencies.

Seeing or admitting that there is a problem, finding and imple-

menting solutions are complex exercises. One of the biggest obstacles is the gap between theorist and practitioner, researcher and manager. Laboratory solutions often don't wash on the ground. Finding a means of making theoretical solution workable, and acceptable to implementing agencies is one of the great challenges of wildlife management today. The CBSG Processes have been developed to meet such challenges. Here's what we did in the Training :

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MONDAY - THURSDAY NOON

Participation in a real P.H.V.A. Workshop.

THURSDAY - FRIDAY EVENING

Participants finish modelling exercises for P.H.V.A. and do initial proofreading of DRAFT.

FRIDAY - 07.07.95

1. Group discussion about expectations from the remaining days of the Training Workshop.

SATURDAY - 08.07.95

1. Jon Ballou - Demography overview - Life tables
2. Ulie Seal - Process principles and Concepts
3. Working Groups - Follow-up Plan for a P.H.V.A. Workshop

SUNDAY - 09.07.95

1. Modelling report presentation and discussion (Barasingha)
Afternoon free

MONDAY - 10.07.95

1. Jon Ballou - Demography - Stage based life tables
2. Ulie Seal - CBSG PHVA Workshop process stages
3. Sally Walker - Organisation of PHVA in India
4. Working group - Planning a PHVA Workshop for *Cervus duvauceli branderi*

TUESDAY - 11.07.95

1. Jon Bailou - Genetics of Small Populations
2. Ulie Seal - IUCN criteria for threats /Camp workshop
3. Working group : CAMP Process using Indian mammals studied by W.I.I.

WEDNESDAY - 12.07.95

1. Jon Ballou - Genetics continued - Inbreeding / Outbreeding
2. Helen Stanley - Molecular genetics in within-species diversity conservation
3. Ulie Seal - Effective collaboration
4. Working group : CAMP Process using Indian mammals studied by W.I.I., continued

SMALL POPULATION BIOLOGY & CBSG PROCESSES

When trying to report on a Training Course in a publication like ZOOS' PRINT with page limitations, it is very difficult to give a complete picture of what was even attempted, much less conveyed. The quality of resource persons brought for this training was superb – Dr. U. S. Seal, Chairman of the Conservation Breeding Specialist Group, Dr. Jon Ballou, Population Biologist, and Dr. Helen Stanley, Population Geneticist – and all of them not only made presentations but were available for individual discussions with participants with specific projects and problems. It is not possible to reproduce all their presentations in this volume – and since much of the material was presented in a form reflecting some very new information it has not been written up into "publishable" material as yet. At some point in the future, this material will become available in print – hopefully in ZOOS' PRINT itself.

In this issue of ZOOS' PRINT we can only give a hint of some of the points which were presented by Drs. Seal, Ballou and Stanley.

Since Small Population dynamics and biology is at the core of so many of the conservation problems we are facing today, we reprinting a classic article by Jon Ballou, An Overview of Small Population Biology which appears in most briefing books and the VORTEX manual.

The CBSG processes and programmes form a complete Unit or "Conservation Kit" which utilise the most current information, often resulting again from the processes and programmes being carried out all over the world. The primary goal of the Conservation Breeding Specialist Group (CBSG) is to contribute to the development of holistic and viable conservation strategies and action plans, integrating *in situ* and *ex situ* conservation management.

CAMP => PHVA => GCAR & GASP => GRB

It is equally hard to describe the "big picture" in a few articles or paragraphs. The diagram above is an attempt to represent the process of trying to cover all the basis of species recovery. CAMP Workshops begin what is sometimes the very first genuine exercise in getting a diversity of conservation specialists to assess a broad spectrum of species individually. At CAMP Workshops, participants decide whether a species requires more intensive assessment and if so, a PHVA is recommended. At both CAMP Workshops and PHVAs recommendations regarding captive programmes are made. Sometimes the recommendation is that a captive breeding (zoo) programme is not required for conservation. At other times, the only salvation for a species in BIG trouble is reintroduction of captive born animals back to the wild. Through other CBSG processes this delicate and difficult programme can be structured so that minimum animals have to be captured from the wild. Those are the GCAR and the GASP. A GCAR - Global Captive Action Recommendations - takes up collection planning on a regional and global level so that captive populations are managed for genetic and demographic viability. A GASP - Global Animal Survival Plan - goes a step further to actually integrate *in situ* and *ex situ* country by country with a variety of programmes aimed at recovery of the species where its numbers are very low. If it emerges from the totality of these workshops that natural breeding will not be sufficient to supply enough individual animals to meet the demand of the recovery, the only alternative to extinction may be artificially assisted reproduction and for this reason CBSG is promoting the concept of the Genome Resource Bank (GRB) at regional and international levels.

Much of the material about these programmes was covered in the Training Manual, a 400 page tome full of conservation information. We have a few copies of the Training Manual left which can be ordered from CBSG, India for Rs. 300/-.

ROLE OF GENETICS IN CONSERVATION BIOLOGY

Contributed by Dr. Helen Stanley

Genetic variation is 'raw material' for adaptive change. It occurs at 3 levels: within individuals, within populations and among populations.

Loss of variation occurs in small populations through founder effects, genetic drift and inbreeding.

Human movement of organisms can erode inter-population differentiation through "artificial" gene flow.

Management of genetic variation in nature involves different time scales.

Appropriate units of conservation for any species should be based on any reasonable biological criteria that identify separate populations - this will depend upon many factors, including the behaviour and ecology of the species.

Genetically, conservation units can be defined on a hierarchical scale - partitioning the total genetic diversity of a

species into within and population components.

Biogeographic analysis helps determine natural population genetic structure and historical gene flow among populations.

The relative depths of evolutionary separation of geographic groups can be assessed - older lineages may be given conservation priority.

However, every species requires its own assessment and planning for genetic management.

Genetics can also:

- identify unique gene pools in need of special protection;
- clarify taxonomy of declining species;
- help direct the management of captive breeding efforts.

HOWEVER, first and foremost, habitat protection/ecological management is the priority.