In the final analysis, the human-elephant conflicts cannot be resolved by capturing chronic crop raiders alone. This is only a short-term measure with limited objectives. If carried to an extrene, it could pose a real threat to the survival of the elephants in the wild. There is therefore no substitute to the protection of the elephant habitat. The best opportunity for elephant and other large mammal conservation in Sumatra seems at present to lie in some form of multiple-use-pattern of rangeland development. The problem of elephant provides yet another compelling argument for ending the indiscriminate felling and deforestation which have been sweeping across much of tropical Asia. While the need to retain large tracts of undisturbed climax ecosystems is axiomatic, it is not essential *ipso facto* to stop commercial exploitation of timber in forest to be managed as a habitat for elephant: it is simply necessary to control it strictly. Trees must be taken on a selective basis and extraction limited to those exceeding 50 cm at breast height, leaving the remainder to provide open canopy until saplings grow up to replace trees removed. Such a policy is in any case required to provide sound long-term forest management to replace the destructive expoitation that has been turning large areas of Sumatra into degraded environments of no economic or environmental value.

Today, we find the elephant with his back against the wall in Sumatra, with little remaining habitat left, and even that increasingly threatened by the burgeoning human population. The future of elephant lies in man's hands and the extent to which he is prepared to share the land with it. For this to come about, and it is essential as a long term aim, conservation education should encourage people to take a balanced attitude to elephants and recognize their ecological role in the ecosystems and their potential use to man in agriculture, forestry and tourism.

Need for an International Registry of Domesticated Elephants

Richard C. Lair

Government elephant operations in Asia are now unintentionally fulfilling exactly the same role that Captive Breeding Centers in the West serve for many other Endangered Species, though the Asian operations are or have the potential to be more efficient, flexible, and cost-effective than conventional Western CBCs. Existing Forest Department elephant operations (and certain viable communities of privately-owned elephants) are financially self-sustaining CBCs where the animals get a more natural diet, better exercise and better social and reproductive opportunities than in Western CBCs or zoos. Marshall, who worked for years in the forests of Thailand, wrote. "It is axiomatic that the nearer a captive animal's living conditions can approximate to those of its wild cousin the fitter it will be . . . " and the well managed government elephant operation certainly fulfills these conditions, all of which lead to better breeding. In spite of their relatively low birth rates, Forest Department elephant births still far outnumber those in Western zoo. *This invaluable function should be recognized and supported by the international wildlife conservation community.* One appropriate initial role for international wildlife organizations might be begin to gather the documentation and biodata that is essential to modern management and captive breeding.

The registration of privately-owned elephants will be a very slow and complicated business requiring new legislation, licensing, massive funding, unprecedented inter-agency efforts and tens of thousands of man-hours in the field. A centralized registry for government elephants, on the other hand should be very easy and economical: it could almost be done by

mail. If all Forest Departments cooperated fully, it should be possible for every government-owned forestry elephant in Southeast Asia to be registered in a central, computerized databank within a year or two. A program to conduct basic analysis of population dynamics should be included from the very earliest stages.

Standard forms

Gathering the basic data needed for an accurate census and for basic population analysis of discrete populations would consist of providing sets of simple, pre-numbered questionnaire forms, one form for each elephant. Such blank forms would include a pre-assigned number as well as spaces for name, location, sex, date of birth or approximate age at capture, place of birth or capture, name of parents (if possible), births (for cows including new forms for calves), death, sale, 'gone astray', etc. (Caughley [1980] provides a list of basic data required for a full analysis of domesticated elephant population dynamics). Biodata (such as height, weight and other biological parameters, including veterinary treatment) would be possible but optional. (Registration forms should be designed by a committee of managers and scientists so as to elicit all essential information in the easiest, most user friendly way. This form must be very well thought out: both the information it elicits and the programming for analyzing that information should be definitive since they will be used into the for eseeable future.

Registering the whole government-owned population in Southeast Asia might sound a daunting task but it is not. The government elephants in the region number only some 3,000, the vast majority of them in Burma. These elephants are government property to be accounted for and thus existing standards of documentation are almost universally excellent. (So excellent in fact that in some cases it might even be possible to backtrack through departmental registers and expand the data base to include deceased animals so far back as there is full and accurate documentation for every elephant in a closed management unit). Managers normally possess all needed data in ledgers right at their fingertips. Since (beyond writing the name of the locale and the name of the elephant) data entry will consist of checking boxes or writing numbers, filling out the master forms should take no more than a few minutes altogether. The manager of 50 elephants would require only two or three hours per animal: regular updates for births, deaths, transfers, etc., would take very little time indeed. (Initial entry from completed individual forms into the computer would take no more than two weeks or so.

Beyond its value as a regularly updated census, such a form would instantly yield very useful data on population dynamics, the scientific value of this data would constantly increase with annual or biannual updates. This information could be used to continuously monitor individual elephant establishment and to provide local managers with a long-term perspective of what is happening to their elephants. Some central organization in each country should have a computer with all relevant information. Long term captive breeding could begin with an adequate statistical and documentary base, both locally and regionally. Thus a tremendous amount of good could come from a very small amount of money. Beyond designing, distributing and printing a simple form, there would be few costs beyond postage and tabulation of the data.

Beyond being useful to international experts, the fruit of such forms would also be very useful to local managers. Discrete elephant groups could be analyzed (using standard techniques) and a prognosis given to manager's on the groups 'health' (dangerously high median age, sexual imbalance, etc.)

Such a hypothetical registration and biodata program inevitably calls to mind the International Species Inventory System (ISIS), a computerized 'stud book' initiated in 1973 by over 150 zoos primarilly to monitor and subsequently advise on captive breeding of wild animals, most of which are – like the Asian elephant – Endangered Species. Certainly any results of an Asian program should be sent to ISIS, and perhaps ISIS would be in a position to advise or assist. There is very good reason to register

the Asian elephants kept in Western zoos and other institutions.

Supplementary standard research forms

The essential data for individual animals could be expanded by the use of supplementary forms (or optional pages in longer basic forms) to include very detailed data on key areas of elephant use and welfare, especially work performance and veterinary histories. Comparative studies would be greatly facilitated. Physiological studies (blood analysis, genotyping, etc.) are another possible research focus which could use standard forms.

Management Unit forms

Virtually all government elephants work in good-sized but isolated groups. There is a regular but low inward osmosis consisting of captures, wild orphans and rare purchases or trades, there is very little outward flow beyond a few gifts and even fewer escapees. Individual registration forms would thus in aggregate describe closed-system elephant groups. A supplementary form or questionnaire could elicit information on management conditions of such groups (the nature and extent of the surrounding forest, forage, work hours, man hours in supervision, etc.) in order to provide background useful for analysis.

Registration of privately-owned elephants

The ultimate goal of any Asian registration and biodata gathering effort would obviously be to extend coverage to as many of the 12,000 privately-owned elephants as possible. Certain populations, such as the 3,000 private elephants in Burma working under government contract, Sri Lanka's easily studied elephants and Vietnam's single, localized population come to mind as likely goals. Other sizeable populations must probably wait for governments to introduce legal protection and licensing for private elephants before effective international registration is possible. Perhaps in some places government departments or NGOs could stimulate owners to register voluntarily.

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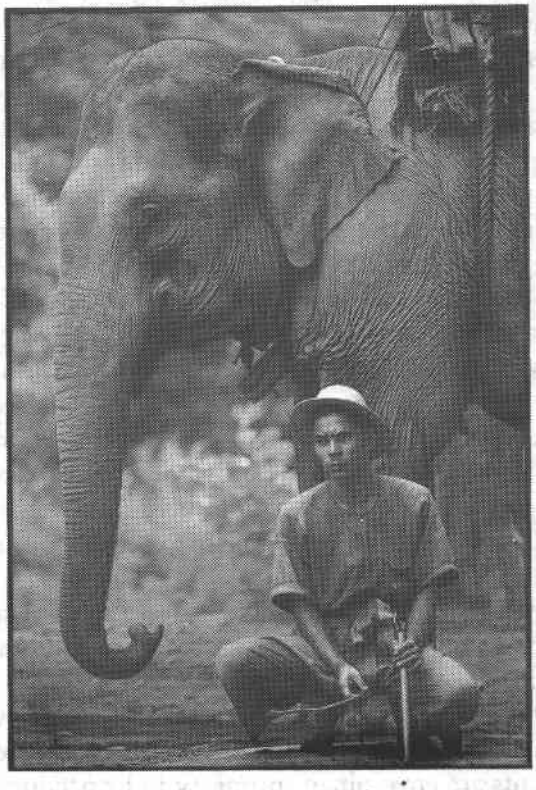


Fig: A Thai mahout and his elephant in Chiangmai (Photo: Jatuporn Rutnin).