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# The Importance of Elephants in Burmese Forestry: A Proposal for World Bank Support

Jeffrey A. McNeely

*IUCN Commission on National Parks and Protected Areas*

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**THE IMPORTANCE OF ELEPHANTS IN BURMESE FORESTRY:  
A PROPOSAL FOR WORLD BANK SUPPORT\***  
by Jeffrey A. McNeely

**I. THE ROLE OF ELEPHANTS IN BURMESE FORESTRY**

For hundreds of years, elephants have been the most important animals in Burmese forestry. They are particularly useful in the broken, hilly country which harbors the most productive teak forests, dragging logs to streams or roads where they can be further shipped by truck, floating, or other means. A number of characteristics make elephants particularly suitable for this work:

- they are intelligent, and with a minimum of guidance from their oozie they are capable of dragging logs from the felling site, breaking up log jams on rivers, stacking logs in assembly yards, and the myriad other activities involved in the teak trade;
- they are relatively cheap to operate, being able to find the bulk of their food in the forest;
- they are able to work in wet, muddy conditions when machines often are bogged down;
- they are relatively non-damaging to the environment, not requiring roads to be built in the often steep areas where they operate;
- they are self-reproducing if managed properly;
- each elephant can begin transport work at age 5 and be fully occupied in teak extraction from 18 to 55 years of age.

**II. CURRENT STATUS IN CAPTIVITY AND IN THE WILD**

There are at present some 2,634 working elephants registered in Burma (down from 10,000 in 1942), with a captive breeding rate of 1-1.9 percent per annum; each elephant is capable of dragging an average of 150-200 tons of teak to the loading point per year, potentially accounting for some 400,000 tons, which is roughly the current level of production. The number of wild elephants is estimated at 5,000 to 10,000, with an annual reproduction rate of about 5 percent. About 150-200 wild elephants are captured each year for training as working elephants.

**III. REPRODUCTION AND MORTALITY**

Cow elephants have been reported to produce young by the age of eight years, but 15 years is probably a more reasonable average age at first birth. Gestation averages about 21 months, and lactation can last up to 4-5 years, effectively stopping further reproduction during that time. Captive cows can

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thus produce one calf every 6-7 years, but if a calf is separated from the mother at the age of 2 years, this figure can be reduced to about one calf every five years, or a total of seven to eight young produced during the reproductive life of a female.

Mortality of 714 elephants studied over 16 years (U Toke Gale, 1974. Burmese Timber Elephant. Trade Corp., Rangoon) showed the following:

Age	Number	Percent
0 - 9	78	11
10 - 17	27	4
18 - 35	185	26
36 - 54	222	31
55 - 70	202	28

Note that 57 percent of the elephants died between the ages of 18 and 55, during their prime working years.

#### IV. CAPTURE OF WILD ELEPHANTS

Most elephants are caught by the keddah system, where small groups of wild elephants are driven into a stockade, then removed individually for training. Average mortality during keddah operations is 12.4 percent, up to 23.1 percent in some years. The method has the advantage of capturing large numbers of elephants in one effort, but it is highly manpower-intensive and is rather non-selective (so that a certain number of unsuitable captives must be released or destroyed). The other major method is the mela-shikar system, where a few highly trained cow elephants and experienced elephant men rope individual elephants, then take them back to a camp for training; mortality averages 14.3 percent. This method has the advantages of taking only suitable elephants and using relatively little manpower; mortality can be reduced once the use of tranquilizer darts becomes more common (the method is already being used by the Timber Corporation).

#### V. OBSTACLES IN THE EXPANSION IN USE OF ELEPHANTS

The low rate of reproduction in captivity and the high mortality rate among prime working elephants are symptoms of overwork and its inevitable concomitant, poor nutrition. It therefore seems clear that the current number of working elephants is insufficient for requirements and that an expansion of teak production (as planned under the IBRD Forestry II loan) without a corresponding improvement of elephant management is quite likely to cause a further deterioration in the situation. Increasing the supply of wild elephants is premature, given the lack of accurate census data, the rather high mortality rates during capture, training, and working, and the general lack of conservation measures for wild elephant populations.

#### VI. A PROPOSED ELEPHANT MANAGEMENT PROGRAMME

An improved elephant management programme for Burma should have two interdependent components, dealing with captive and with wild populations.

A. Captive elephant management: The State Timber Corporation is planning an improved elephant management programme, and there is little doubt that there is sufficient expertise available within Burma; however, this expertise needs to be drawn together into an administratively effective programme.

Objectives: To improve standards of nutrition, captive breeding, and working; to reduce mortality during training and working; to standardize training and working techniques; and to improve training of oozies. The programme should have the following components:

1. Systematic interviews with experienced oozies and elephant workers in various parts of the country in order to obtain a broad range of ideas and suggestions for an optimal elephant management programme.
2. Drafting of a Captive Elephant Management Manual, using management standards agreed to by the State Timber Corporation.
3. Establishment of an Elephant Training School, where some wild-caught and captive-born elephants can be brought for training, where new oozies can also be trained in standard management techniques, and where new management techniques can be developed. Such a school also has some tourism potential.
4. Preparation of a course in elephant management for foresters at the Faculty of Forestry, University of Rangoon.
5. Preparation of a course in elephant veterinary medicine to be taught at the Livestock Development Marketing Corporation.

B. Wild-elephant management: Objectives: To census wild populations of elephants; to determine optimal sustainable yield of new captives; to improve capture techniques; and to ensure the survival of wild elephant populations in perpetuity. The programme should have the following components:

1. Survey of wild populations by questionnaires sent to Regional Forest Officers.
2. Based on results of this survey, a series of ground surveys of the most promising forest areas to yield a more reliable data base.
3. Based on the new data base, an expert in elephant management should make an assessment of the optimal sustainable yield of appropriate elephants for training and should devise and implement an improved capture programme, possibly based on the use of tranquilizing drugs and the traditional mela-shikar system.
4. As an integral part of the wild elephant management programme, a system of elephant reserves should be established, including several where no capture or other disturbance of the wild population would be allowed.

## VII. WORLD BANK INVOLVEMENT

In view of World Bank interest in improving teak production in Burma (Forestry I and Forestry II loans totally US \$68 million), it is suggested that the Bank could appropriately support improved elephant management along the lines suggested in this memo. This would involve approximately 36 man-months of expert services, foreign exchange costs of establishing the Elephant Training School, publication of an elephant management manual, supplying of materials for improved capture methods and courses on elephant management and elephant veterinary medicine, and foreign exchange costs of establishing the basic system of elephant reserves. While precise costs would need to be negotiated with the Forest Department and the State Timber Corporation, it is expected that total cost of the three-year programme would be under US \$1 million.

**Author's address:** Executive Officer, IUCN Commission on National Parks and Protected Areas, Avenue du Mont Blanc, CH-1196 Gland, SWITZERLAND

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