SPECIES DIVERSITY IN TASAR SILKMOTH AND ITS FUTURE SCENARIO

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The Natural silks are broadly classified as mulberry and non-mulberry or wild. Non-mulberry sericulture is universally known as forest or wild sericulture. The principal non-mulberry silks are tropical and temperate tasar, eri, muga and anaphe. Of theses varieties of non-mulberry silks, tasar is the main attraction of biologists because of high quantum of production in India. Nearly 95% of the global production of non-mulberry silks is tasar (Anon. 1987). Moreover, out of eri, muga and tasar silks, tasar is a semi-domesticated variety. The dense, humid tropical forest sprawling over the central and southern plateau is the habitat of tropical tasar. The major cocoon-producing districts are Singhbhum and Santhal Pargana in Bihar, Raigarh and Jagdalpur in Madhya Pradesh; Mayurbhanj and Keonjhar in Orissa; Purulia and Bankura in West Bengal; Bhandara in Maharashtra; Adilabad and Warangal in Andhra Pradesh; Belgaum in Karnataka (Jolly *et al.* 1979).

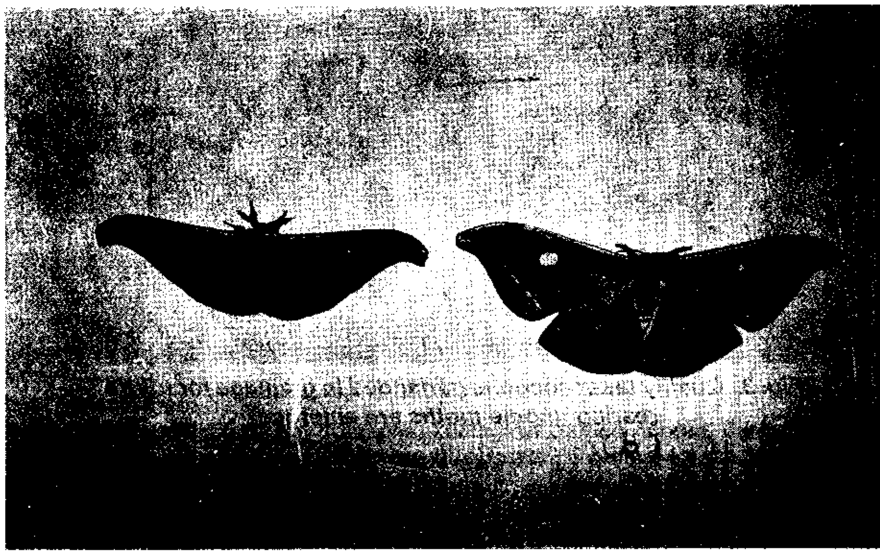

Fig. 1. Tasar moth (Antherasa) a) Male moth, b) Female moth

Breeding Potential of Tasar Silkmoth

Breeding and genetics are essential parts of tasar culture. The sericulturists have concerned mainly with analysis of the breeding and genetic potential of the tasar fauna and an understanding of its genetic architecture so as to offer an appropriate stock or breeding base with a broad genetic spectrum (Makino 1956; Jolly, *et al.*, 1970; Khosla and Kaur, 1974; Sen and Sengupta, 1976).

Owing to free interbreeding in nature for centuries, the tasar (*Autheraea*) fauna is highly heterogenous, which makes it a potent material for breeding and genetics. Twenty five eco-races of *A. mylitta* D. (Fig.I) alone reveal interesting variabilities (Table 1). The gathering and maintenance of genetically diverse populations are the essential elements for breeding experiments. Because of the high hetero-geneity in the races of *A mylitta* D. pure line breeding is a prerequisite of hybridization. Cytological investigations on fifteen eco-races of *A. mylitta* do not establish any numerical variability (n=31) between the eco-races (Jolly, *et al.* 1970). These fifteen eco-races are Jadie, Bogai, Jira, Moonga, Barharwa, Daba, Sarihan, Moogia, Patjharia, Laria, Modal, Raily, Giribam, Belgaum and an eco-race from southern Vietnam. However, sixty two species are now available in the record (Table 2) (Annon 1987).

Fig. 2. Fully developed tasar cocoons (moths emerged)

Future Scenario

The basic simulation scenario for this short lived tasar moth is close to the margins of survival for the species. The species appears to be particularly at risk from high environmental variation and periodic seasonal influence. Because of the uncertainities over certain key features of the ecology of this species, the number is in the process of declining. Apart from forest protection for the sur-

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Fig. 3. Quality tasar cocoons garlanded in grainage for future rearing (some moths are emerged)

vival of this species, quality and quantity of cocoon production should be aimed at. In fact, proper hybridized stocks need to be maintained and preserved for immediate economic interest to the industry. This would provide an opportunity to investigate the genetic and evolutionary significance of the highly variable phenotypes observed across habitats by forms species. A proper breeding programme to improve quality of cocoons (Fig. 2,3), race and security for the future is recommend.

References

Anonymous 1987 Manuala on sericulture. Central Silk Board, Bombay, P. 1-100.

Jolly, M. S., Sen, S. K. and Sinha, S. S. 1970 Chromosome number in the Chinese tasar silkworm *A. bernyi*, G. M. Indian J. Ent. 32: 91-92.

Jolly, M. S., Sen, S. K., Sonwalkar, T. N. and Prasad, G. K. 1979 Non-mulberry silks. Food and Agriculture Organization of the United Nations, Rome. 1-13.

Khosia, P. K. and Kaur, I. 1974 Cytological Studies on some woodey species. Indian Forester 100: 696-704.

Makino, S. 1956 A review on chromisome number in animals. Tokyo, Mokuryuken, P. 110.

Table 1 Eco-races of *A. mylitta* D.

Ecotype	Food Plant
1. Daba (Bihar)	Terminalia
2. Laria (M. P.)	"
3. Daba (M.P.)	"
4. Bhandara	"
5. Sarihan	"
6. Nega	"
7. Bogai	"
8. Jadie	"
9. Moonga	"
10. Nowgaon	"
11. Andhra	"
12. Nalia	Shorea
13. Raily	"
14. Mugia	"
15. Mirzapur (U.P.)	"
16. Barharwa	"
17. Modia	"
18. Laria (Bihar)	"
19. Patjharia	"
20. Modal	"
21. Munga (W. B.)	"
22. Jarui	"
23. Sourthern Vietnam	"
24. Giribam	*Zizyphus*
25. Belgaum	*Hardwickia*

Table 2: Tasar Silk Fauna(Antheraea)

Sl. No.	Name of the species
1.	*Antheraea mylitta* Drury
2.	*A. Pachia* Linn.
3.	*A. assamensis* Ww.
4.	*A. knyveti* Hmps.
5.	*A. compta* R. & J.
6.	*A. frithi* Mr.
7.	*A. helferi* Mr.
8.	*A. roylei* Mr.
9.	*A. sivaliua* Mr.
10.	*A. andmana* Mr.
11.	*A. pernyi* Mr.
12.	*A. amamai* G. M.
13.	*A. Pasteuri* Bouv.
14.	*A. raffrayi* Bouv.
15.	*A. lana* Stoll
16.	*A. semperi* Fldr
17.	*A. cordifelia* Weym.
18.	*A. pratti* Bouv.
19.	*A. imperator* Wts.
20.	*A. brunnea* Eecke
21.	*A. billitonensis* Mr.
22.	*A. larissa* Ww.
23.	*A. ridleyi* Mr.
24.	*A. prelarissa* Bouv.
25.	*A. surakarta* Mr.
26.	*A. mylitoides* Bouv.
27.	*A. delegate* Swh.
28.	*A. fickei* Weym
29.	*A. sciron* Ww
30.	*A. harti* Mr..
31.	*A. gephyra* Niep
32.	*A. rumphi* Fldr.
33.	*A. eucalypti* Sott.
34.	*A. tarissoides* Bouv.
35.	*A. polyphemus* Cram.
36.	*A. fasciate* Mr.
37.	*A. versicolor* Mr.
38.	*A. pulchra* Mr.
39.	*A. schripicta* Mr.
40.	*A. pristina* Wkr.
41.	*A. fraterna* Mr.
42.	*A. cingalesa* Mr.
43.	*A. celebensis* W. & S.
44.	*A. buruensis* Bouv.
45.	*A. subcaeca* Aurvil
46.	*A. fusea* Roth.
47.	*A. minahassae* Niep
48.	*A. sumatrana* Niep
49.	*A. borneensis* Mr.
50.	*A. korintiina* Bouv.
51.	*A. perrotteti* Guer.
52.	*A. yongei* Wts.
53.	*A. insularis* Wts.
54.	*A. favanensis* Bouv.
55.	*A. hazna* Butt.
56.	*A. calida* Bklutt.
57.	*A. morosa* Butt.
58.	*A. fentoni* But.
59.	*A. serqustus* Ww.
60.	*A. nebulesa* Hutt.
61.	*A. olivascens* Mr.
62.	*A. platessa* Roth.