

Aureggi, M. Gerosa, G. and S. Chantrapornsyl (in press). **Elimination of egg poaching activity at Phra Thong island, Thailand.** First Italian Meeting on Sea Turtle Biology and Conservation. Policoro, Italy.

Chantrapornsyl, S. 1992. **Biology and Conservation of Olive Ridley Turtles (*Lepidochelys olivacea*) in the Andaman Sea, Southern Thailand.** *Phuket Marine Biological Center Research Bulletin* 57:51-66.

Chantrapornsyl, S. 1997. **Status of Marine**

Turtles in Thailand. Unpublished manuscript. 9pp.

Mather, Robert. **Marine Turtle Conservation in Thailand.** Tourism Authority of Thailand website.
<http://newsroom.tat.or.th/others/1924.asp>

Authors' addresses: Monica Aureggi and Lucy Young, c/o Naucrates, Onlus, Via Corbetta, 11 - 22063 Cantu' (CO), Italy, e-mail: naucrates12@tiscalinet.it; Supot Chantrapornsyl, Phuket Marine Biological Center, P.O. Box 60, Phuket 83000, Thailand.

DEER (CERVIDAE:ARTIODACTYLA:MAMMALIA) WILDLIFE POTENTIAL WITH FUTURE EXPECTATIONS

by Freddy Pattiselanno

Introduction

The wildlife living in tropical forests are an important resource that is hunted for food, sale, and for social and cultural reasons by local communities living in and around the forests. Wildlife provides significant calories for rural communities as well as essential protein and fats (Bennet *et al.*, 2000); Townsend, 2000). According to Redford (1993), wild game is an important source of protein for rural people and its sale is an important source of cash. Shaw (1991 cited by Robinson and Bodmer, 1999) indicated that most hunting is for subsistence or for commerce.

As Bigalke (1973) summarized from several literatures, in modern times, aside from ungulates (peccary, moose, caribou and bison), deer (white-tailed deer, mule deer and elk (or wapiti)) has played an important role in wildlife utilization farms, focusing on game utilization in North America. Other literature cited that deer is one of the wildlife species hunted by man because of its economic value in both

market and subsistence (Bodmer, 1994; Cullen Jr. *et al.*, 2000). In West Papua, together with wild pig, deer is one of the target animals widely hunted throughout the area (Pattiselanno, 2002).

In an effort to domesticate some wildlife as farmed animals, rearing in captivity currently tends to be gaining attention. Deer is one of the farmed animals that is being developed in a wide range of climatic and vegetative regions. The domestication of deer has presented unique opportunities and challenges to pastoral farmers.

Under Indonesian government policy (Department of Agriculture Act No. 362/Kpts/TN.120/5/1990), deer are classified as wildlife that can be reared as farm animals. Deer farming is now considered as a source of income generation for the country.

In some western countries (e.g. New Zealand, Australia and several countries in Europe) deer

production systems are well developed and deer are currently farmed as self-replacing herds, under either intensive or finishing units (Sinclair and Woodford, 2000). The basic reason for the significant increase in deer exploitation around the world is to supply food for people. In wild conditions deer are conventionally hunted for its meat as a source of protein and for the antlers, which are fashioned into decorative ornaments.

The following report will explore the utilization of deer, based on a review of literature on the utilization aspect of deer as wildlife and the management approach related to sustainable management. This paper will aim to explain the contrasting utilization aspects of deer in terms of hunting and deer farming development.

Utilization of deer

Traditionally, the exploitation of deer is a familiar wildlife hunting activity. As target animals, deer is commonly utilized as a source of animal protein for human diets. Furthermore, in some countries where hunting is recognized as a sport activity, deer as a game species has more advantages, not only for recreational purposes, but also for the prestige gained by the hunter.

It is also important to note that deer hide is very popular for making hand-made accessories (e.g. wallets, bags, jackets and shoes) because of the higher quality compared to other animals. Deer antler is also now being commercialized for household use, specifically as traditional decorations. Typically, the more branches on the antler, the more desirable the product, which multiplies the price.

Presently, the need for deer meat is rapidly increasing for the following reasons. According to Woodford and Dunning (1992) the dressing percentage of Rusa deer is 51-64%. In terms of nutrients, deer meat (venison) has more protein, phosphor and niacin compared to beef and lamb. For health reasons, we may be better off considering deer meat due to its low cholesterol content compared to beef, lamb and pork (Subekti, 1995). Rusa carcasses yield more lean meat than cattle and typically have little fat

(about 5.2-9.6%) (Sookhareea *et al.*, 1995 cited by Dryden, 2000).

According to Haigh and Hudson (1993) cited by Subekti (1995), since up to now we have mainly depended on cow's milk, it is exciting to look for other sources. For example, the nutrient content of deer's milk is higher in protein (12.7%) compared to cow's milk (3.4%), sheep's milk (5.5%) and goat's milk (4.5%).

Modern research is increasingly recognizing the therapeutic benefits of deer velvet. Deer velvet contains prostaglandin, important cell function regulators that play a key role in the body's response to injury, inflammation, infection and pain.

On the basis of some of the examples stated above, tropical and sub-tropical deer production systems have been developed in a wide range of climatic and vegetative regions. Commercial deer farms based on extensive and intensive systems are rapidly attaining the status of a mainstream animal industry across Europe, Asia, North America and Australia (Asher, 2000).

Description of farmed deer

IUCN (1998) stated that deer belong to the animal group classified under the Order: Artiodactyla, Family: Cervidae. According to Fletcher (1998) cited by Asher (2000), Red deer (*Cervus elephus*), represented by subspecies distributed naturally across Europe, Asia and North America, is one of the newest ruminant domesticants in pastoral farming. The temperate origin species Fallow (*Dama dama*) is also being farmed (Sinclair and Woodford, 2000).

Two tropically adapted species, i.e. Rusa (*Cervus timorensis*) and Chital (*Axis axis*) are being farmed in tropical and sub-tropical regions of Australia. The two most important sub-species from a farming perspective are Javan Rusa (*Cervus timorensis rusa*) and Mollucan Rusa (*Cervus timorensis mollucensis*). Javan Rusa are widely farmed in Australia, New Caledonia and Mauritius, with lesser numbers farmed in Malaysia, Thailand, Indonesia and the

Philippines. There are also herds of Rusa in various parts of Malaysia and the Philippines that have been established from Australian-bred animal combinations between Javan and Mollucan parentage (Dryden, 2000).

Advantages of deer farming

Basically, the potency of deer as farmed animals benefits farmers in terms of production: venison, velvet antler and by-products (Dryden, 2000). The development of deer farming in New Zealand has come a long way in 25 years and according to Asher (2000), there are presently 2 million deer farmed across 4,500 properties, generating an annual revenue of \$NZ240 million from the export of venison and velvet antler products.

In Western Australia, since 1979 deer farming has been a growing livestock industry and by 1990 there were 74 registered properties running to 7,800 deer (Kelly, 1998). Recent survey data indicates an industry of some 20,000 head from approximately 100 farmers in Queensland (Sinclair and Rickert, 2000), which would derive around 60% of gross income from venison, with velvet and live animal sales contributing 35% and 5% respectively.

Aside from commercial purposes, in terms of conservation, the development of deer farming is one of several strategies that are now being considered for implementation as reservoirs of genetic variation in order to protect the genetic resources. (Pamberton and Smith, 1991). In addition, deer farming could also be developed under extensive systems where deer are held behind wire but involving minimal husbandry, such as in Mauritius (Dryden, 2000). We can therefore utilize the availability of tropical pasture with native grass in relation to the management strategies offered.

Conclusions

The utilization of deer as a farmed animal is of current importance due to the commercial value (i.e. venison as an animal protein source for human diets; velvet antler as a medicinal product; by-products such as the hide) and for

the conservation issue (as a reservoir of genetic variation).

References

- Asher, G. 2000. **Genetic improvement and reproductive control of farmed Red Deer and Wapiti (*Cervus elephas*)**. *Asian-Aus J. Anim. Sci.* 13, Supplement July 2000C: 54-61.
- Bigalke, R.C. 1973. **Technological problems associated with the utilization of terrestrial wild animals**. In: R.L. Reid (Ed.) *Proceedings of the 3rd World Conference on Animal Production*, Melbourne, Australia. pp.36-46.
- Bennet, E.L., Nyaoi, A.J. and J. Sompud. 2000. **Saving Borneo's bacon: the sustainability of hunting in Sarawak and Sabah**. In: J.G. Robinson and E.L. Bennet (Eds.) *Hunting for sustainability in tropical forests*. New York, Columbia University Press. pp. 305-324.
- Bodmer, R.E. 1994. **Managing amazonian wildlife: biological correlation of game choice by detribalized hunters**. *Ecological Applications*, 5(4):872-877.
- Cullen Jr, L., Bodmer, E.R. and C. Valladares-Padua. 2000. **Ecological consequences of hunting in Atlantic forest patches, Sao Paulo, Brazil**. *Oryx* Vol.35(2):137-144.
- Dryden, G. Mc. L. 2000. **An overview of subtropical and tropical deer production systems**. *Asian-Aus. J. Anim. Sci.* 13, Supplement July 2000C:62.
- IUCN/SSC Deer Specialist Group. 1998. **Asia's deer**. In: C. Wemmer (Ed.) *Deer, Status, Survey and Conservation Action Plan*. International Union for Conservation and Natural Resources.
- Kelly, B. 1998. **Introduction to deer farming**. *Farmnote* No.45/89. Australian Deer Farming Association.

- Pamberton, J.M. and R.H. Smith. 1991. **Genetic management of deer farms.** *Australian Deer Farming* Aug 2(4):1-14.
- Pattiselanno, F. 2002. **Wildlife hunting in West Papua: commercial exploitation vs conservation ethics.** Poster presented in the Wildlife Society 9th Annual Conference, Bismark, North Dakota, U.S.A.
- Robinson, J.G. and R.E. Bodmer. 1999. **Towards wildlife management in tropical forest.** *Journal of Wildlife Management* 63:1-13.
- Sinclair, S.E. and K.R. Rickert. 2000. **An overview of the incorporation of management systems for Red and Rusa Deer in Queensland within decision support system.** *Asian-Aus. J. Anim. Sci.* 13, Supplement July 2000C:62.
- Sinclair, S.E. and K.B. Woodford. 2000. **Tropical/sub-tropical deer farming in Australia.** *Asian-Aus. J. Anim. Sci.* 13, Supplement July 2000C:62.
- Semiadi, G. 1998. **Tropical deer breeding.** Masyarakat Zoologi Indonesia, Bogor (in Indonesian).
- Subekti, D.T. 1995. **Identify the deer farming.** *Majalah Ruminansia* No.3-Th.IX:34-36 (in Indonesian).
- Townsend, W. 2000. **The sustainability of subsistence hunting by the Siriono Indians of Bolivia.** In: J.G. Robinson and E.L. Bennet (Eds.) *Hunting for sustainability in tropical forests.* New York, Columbia University Press. pp.267-281.
- Woodford, K.B. and A. Dunning. 1992. **Production cycles and characteristics of rusa deer in Australia.** In: R.D. Brown (Ed.) *The Biology of Deer.* Springer-Verlag, New York. pp.197-202.
- <http://www.afns.ualberta.ca/hosted/deer/overview.htm> **Deer classification.**
- <http://www.animaldiversity.ummz.umich.edu/chordata/mammalia/artiodactyla.html> **Order Artiodactyla.**
- <http://www.orderoutdoors.com/wl4d.htm> **Whitetail deer, Artiodactyla, Mammals.**
- The author is Senior Lecturer, Animal Production Department. His address is: c/o Animal Science Laboratory, Papua State University Manokwari, Gunung Salju St. Amban Manokwari 98314, West Papua, Indonesia; E-mail: fpattiselanno@yahoo.com*

COMMUNITY-BASED CONSERVATION APPROACH AROUND NAMERI NATIONAL PARK, ASSAM, INDIA

by Dilip Chetry, Rekha Medhi and P.C. Bhattacharjee

Introduction

India has one of the world's most extensive networks of protected areas, covering nearly 4.5% of the country's geographical area. Over two-thirds of the Protected Areas (PAs) are inhabited by human populations in India and

there is daily interaction between the local communities and the forest officials. However, a considerable number of wildlife still reside outside the protected areas in places that are owned by or under the control of local communities (Kothari *et al.*, 1998). Therefore, there is a need for a more democratic mode of



TIGER PAPER



REGIONAL OFFICE FOR ASIA AND THE PACIFIC

TIGERPAPER is a quarterly news bulletin dedicated to the exchange of information relating to wildlife and national parks management for the Asia - Pacific Region.

Subscription rate is US\$ 12.00 per year
Please make your cheques payable to:
FAO Regional Office for Asia
and the Pacific
ISSN 1014-2789

ADDRESS TIGERPAPER

*FAO Regional Office for Asia and the Pacific,
Maliwan Mansion, Phra Atit Road,
Bangkok, 10200, Thailand*

Editor: J. Naewboonnien.
Advisors: M. Kashio and P. Durst.

Contents

TIGERPAPER

Hunting Instincts of Big Cats & Possibilities of Reintroduction	
Back in the Wild.....	1
Wildlife Diversity in Lal Suhanara National Park, Pakistan.....	4
Conservation Project at Phra Thong and Kho Khao Islands, Southwest Thailand.....	11
Deer (Cervidae:Artiodactyla:Mammalia) Wildlife Potential With Future Expectations.....	13
Community-Based Conservation Approach Around Nameri National Park, Assam, India.....	16
Feeding Ecology and Factors Influencing the Range of the Dusky Toque Monkey, Udawattakelle Sanctuary, Sri Lanka....	20
Monitor Lizard in Baluchistan, Pakistan.....	28
Population Status and Conservation of Chital in Kalakkad- Mundanthurai Tiger Reserve.....	30
Tiger Gives Birth to Four Cubs in Hanoi Zoo.....	32

FOREST NEWS

Confronting Invaders: APFC Takes on Forest Invasive Species..	1
XII World Forestry Congress Calls for Harmonizing Needs Of People and Planet.....	3
20 th Session of Asia-Pacific Forestry Commission Pegged to Convene in Fiji.....	4
Putting Heads Together in the South Pacific.....	5
Toward the Establishment of a Regional Model Forest Center/ Network for Asia-Pacific.....	6
Managing Forests to Alleviate Poverty - Exploring the Options.	7
RAP Staff Movements.....	10
Asia-Pacific Forestry Chips and Clips.....	11
New RAP Forestry Publications.....	13
FAO Asia-Pacific Forestry Calendar.....	16

TIGERPAPER is dependent upon your free and voluntary contributions in the form of articles, news items, and announcements in the field of wildlife and nature conservation in the Region. In order to better serve the needs of our readers please write to us and send in the information you have or let us know if there is any information that you need. We appreciate receiving your letters and make all efforts to respond.

Cover : Tiger at Van Vihar National Park
Photo : Chandra Shekhar Dubey, Care for the Wild, India

The opinions expressed by the contributing authors are not necessarily those of FAO. The designations employed and the presentation of the material in the **TIGERPAPER** do not imply the expression of any opinion on the part of FAO concerning the legal or constitutional status of any country, territory or sea area, or the delimitation of frontiers.