CEMENTED TANKS IN FOREST AREAS AND WILDLIFE MANAGEMENT

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Introduction

Cemented tanks are generally constructed by Forest Department in plantations, nurseries, seed orchards etc. for irrigation and water storage purposes. A variety of wild animals while wandering in search of food, proper breeding site etc. in their habitat, sometimes stumble in these tanks. Most of them cannot escape from these tanks and meet their death either by starvation, injury or by drowning. Hence to save wild animals, especially the ground dwellers, proper designing of irrigation tanks is necessary.

Area of Study and Methodology

To study the death patterns of vertebrate stumbling into tanks, present study was conducted at World Forestry Arboretum, Jaipur, during 1990 from January to December. The Arboretum is situated at the foothills of Jhalana hills, a Reserve Forest area, at the out skirts of Jaipur. Once it was badly degraded, but due to protection measures, rendered to the area since 1985, presently it has taken shape of a dense woodland. An extent of 145 ha of land confined to foothills is being used to develop an Arboretum. For this purpose trees and shrubs of different isoclimatic countries are being introduced here to creat a miniworld of plants.

Many cemented tanks have been constructed at different corners for irrigation and water storage. Sewage water of Jawahar Nagar, a suburb of Jaipur city, is being used for irrigation. Two types of tanks have been constructed in the area :

1. Raised tanks - with walls projecting above the ground level sufficiently i.e. from 0.3 m to 1.0 m or more, and

2. Sunken tanks - With walls either upto ground level or projecting above upto 0.3 m height only.

To study the 'tanks accidents' three raised tanks having approximately 75 m^2 of storage area and seven sunken tanks having nearly 150 m^2 of internal area were marked. Their depth was from 0.6 m to 2.0 m. Except during rainy season their 25 to 75% capacity was used for storing the water.

All the tanks selected for study were just 'box like' i.e having vertical walls. Besides 3 raised and 7 sunken tanks, one more Sunken tank was selected having an open area of about 15 m^2 which was like a saucer i.e. with sloping walls.

Observations on all the tanks were taken at about 7.00 A.M. daily to count the victims in the respective tanks during the

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preceeding 24 hours. If the unfortunate ones were still found alive they were rescued. All the dead animals were burried in pits to clear the tanks for next day. As many as 20 to 25 days per month were covered for 12 continuous months to collect data. No data about *Rana tigerina* and *R. cyanophlyctis* were included here as these animals used these tanks as their home.

Observations

Statistics of animal victims in the tanks are given in Table 1.

Discussion

It can be concluded from Table 1 that:

1. A fairly good number of animals die in the Sunken 'box type' tanks as due to lack of parapet wall of sufficient height animals are not aware of depth of pit and may easily stumble down into the tank.

2. Not a single casualty of any animal was reported from a 'saucer type' tank. It is very difficult to climb or crawl on vertical walls of 'box type' tanks, but obviously it was not difficult on sloping walls of a saucer type of tanks; hence any animal falling into a saucer shape tank may escape easily.

3. Death rate was very low in raised box type tanks. To save wild life these tanks also prove safer.

4. Death rate of ground dwellers like mammals and amphibians was much higher than avians. Obviously 'walking' is more dangerous than flying from 'pit-fall-death' point of view.

5. Amphibians like *Bufo andersoni, Rana breviceps* and *U. systoma* are not 'aquatic animals'. They come into tanks in breeding period only to lay the eggs. After rains if not removed from water, they die perhaps due to exosmosis caused by sewage water.

6. *Varanus bengalensis* swim well and can remain submerged for a considerable time, hence no death was reported for stumbled animals and all were rescued. Though snakes can swim well they cannot remain submerged even then no death was reported and all were rescued.

In the light of above observations, one may advocate either the 'raised box tanks' or 'saucer sunken tanks' from the safety point of view to wild life. The storage capacity of 'saucer tanks' remains low and their construction cost is higher due to increase in wall dimensions; but such tanks are good as they do not obstruct escape of animals. They can even serve as 'water holes' for wild animals. On the other hand, 'raised box type' tanks though taking lesser toll can not be used as water holes by wild animals, and if any animal falls inside, it can not escape.

Besides their irrigation and storage functions, tanks should be so designed that they can be used by wild animals as water hole without meeting any accident. Hence a combination of 'box type' and a saucer type seems suitable. Three walls of a tank may be vertical and raised and one may be sloping with a suitably rough surface and not slippery. Such design should be adopted even in agricultural fields also as good number of wild animals's population wanders there.

Table 1

Census of Animals killed in Tanks during 1990 in World Forestry Arboretum

Species	Number of animals stumbled in tanks					
	Sunken (Box type) (75 m²)		Raised (Box type) (75 m²)		Sunken (Saucer type) (15 m²)	
	D	R	D	R	D	R
Mammals						
Canis aures (Jackal)	5	1	-	-	-	-
Felis chaus (Jungle Cat)	1	-	-	-	-	-
Golunda ellioti (Indian Bush Rat)	10	-	-	-	-	-
Hemiechinus auritus (Longeared Hedgehog)	7	-	-	-	-	-
Herpestes edwardsi (Common Mongoose)	2	-	-	-	-	-
Lepus nigricollis (Indian Hare)	3	-	-	-	-	-
Meriones hurriane (Indian Desert Gerbille)	10	-	-	-	-	-
Mus booduga (Indian Field Mouse)	3	-	-	-	-	-
Nesokia indica	4	-	-	-	-	-
Presbytis entellus (Common Langur)	1	-	-	-	-	-
Suncus murinus (Grey Musk Shrew)	4	-	-	1	-	-
Tatera indica (Indian Gerbille)	4	-	-	-	-	-
Aves						
Dendrocitta vagabunda (Tree Pie)	1	-	1	-	-	-
Halcyon smyrnensis (Whitebreasted Kingfisher)	1	-	-	-	-	-
Reptiles						
Argyrogena ventrimaculata (Gray's Ratsnake)	-	3	-	-	-	-
Calotes versicolor (Common Garden Lizard)	9	2	-	-	-	-
Naja naja (Indian Cobra)	-	3	-	-	-	-
Spalerosophis diadema var. *diadema* (Royal Snake)	-	1	-	1	-	-
Typhlina bramina (Common Worm Snake)	-	1	-	-	-	-
Varanus bengalensis (Common Indian Monitor Lizard)	-	11	-	-	-	-
Amphibians						
Bufo andersoni (Marbled Toad)	43	-	-	-	-	-
Rana breviceps (Indian Burrowing Frog)	61	-	-	-	-	-
Uperodon systoma (Marbled Balloon Frog)	-	1	-	-	-	-
Total	169	23	1	2	0	0

Rana tigerina and *R. cyanophlyctis* both use the tanks for living places, hence they are not included here.
(D = Dead; R = Rescued)

SUMMARY

Cemented tanks are constructed by Forest Department in forest areas and by farmers in agricultural lands for irrigation and water storage. All the 'box type' tanks having vertical walls are not suitable for wild animals, as once they fall in them they can not escape. Hence atleast one wall of tanks should be sloping so that wild animals can use them as water holes without meeting any accident.

वन क्षेत्रों में सीमेन्ट के बने हौद एवं वन्य प्राणी प्रबंध

सतीश कुमार शर्मा

सारांश

सीमेंट के हौद सिंचाई तथा पानी संग्रह हंतु वन विभाग द्वारा वन क्षेत्रों में तथा किसानों द्वारा कृषि क्षेत्रों में बनाये जाते हैं। सन्दूकनुमा हौदों की दीवारें उर्ध्व होने के कारण वन्य प्राणियों के लिए उपयुक्त नहीं होती। क्योंकि उनमें एक बार गिरने के बाद खड़ी दीवारों पर चढ़ने में असमर्थता के कारण वन्य प्राणी का बच निकलना संभव नहीं होता। अतः हौदों की कम से कम एक दीवार ढालू बनाई जावे तथा तीन उर्ध्व मय पेरापेट बनाई जावें ताकि वन्य प्राणी इन का उपयोग जल स्रोत के रुप में भी कर सकें तथा गिरने की अवस्था में ढालू दीवार से बाहर भी निकल सकें।