

## Common Property Resource Management: The Case of Chatla in Assam

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This paper discusses local people's management strategies of common property, water resource, in a water logging area called Chatla, in Southern Assam. Since there are more than 200 such water logging areas in Assam (Deb, 1999), the implications of this study has wider significance to gain an understanding of the common property management in Assam. Also, the study assumes importance in the context of prudent utilization and sustainable management of different natural resources like land, water, fish, and wildlife and so on in the wake alternatives to industry based development, which is antithetical to the maintenance of balanced ecosystem.

Social scientists' interests in the study of ecosystem are relatively recent in India, and studies of common property management are also few. Agarwal and Narain (1989), Ballabh et al. (1992), Jodha (1994), Misra and Srivastava (1997), Upadhyaya (1994) and so on carried out such studies in India, but perhaps they are very few in northeast India. Further, in these studies we find mainly application of common property theories rather than examining of the theories. In this paper, an attempt is not only to understand the practices of common property resource management in Chatla, in Assam and also to examine some of the theories of common property management in the light of the case in Assam.

### THEORIES OF COMMON PROPERTY MANAGEMENT

It is Garret Hardin (1968) who set the stage for the study of common property management with his publication *The Tragedy of the Commons*. According to him, every one exploits the finite resource at their extreme level due to which there occurs a gradual depletion of the natural resources. Hardin also urged that without intervention from a third party or outsider, there would not have been any solution for preventing the depletion of natural resources. While examining Hardin's proposition, four theories emerged: (1) game theory of Ostrom, (2) property

right school of Eggertsson, (3) institutional approach or neo-institutional economics, and (4) revisionist approach by McCay and Acheson. Without turning to the criticisms leveled against these theories, brief statements about theories may be made here. The game theory anchors on the cooperative nature of the people, which promotes common concern, and interest that will enable them to avoid the tragedy of the common (Neumann and Morgenstern, 1945). According to the property right approach, a participant's action may produce harm or benefit to other participants, and this can be solved by means of internalizing the externalities i.e., the costs of negative externalities must be borne by those who cause them. This will ultimately develop either the concept of private property resources or to introduce taxes or fines (Demsetz, 1967; Alchian and Demsetz, 1973). In the institutional approach, North (1977) advocates institutional framework of non-market to market exchange and a linking between the communal property to private property regime for common property management. He stresses the importance and role of informal rules and constraints in order to regulate the behavioural pattern retaining the basic implications of rational choice theory. The revisionist approach rejects the private property regimes for common property management. In this approach social scientists tried to explain their findings regarding both private property resources and common property resources in a specific model commonly known as Oakerson model. In this model, Oakerson mainly emphasises on the interaction between four different factors such as physical and technological attributes, decision-making arrangement, pattern of interaction, and outcomes. The physical and technological attributes represents characteristics of the resource such as jointness, indivisibility and exclusion; decision making refers to 'who decides what in relation to whom; patterns of interaction refers to the range of possible strategies available; while outcomes refers to distribution, equity and

other measures of institutional efficiency'. The strength of Oakerson's framework is in the fact that it can be used to analyse common property problems and also it allows for a case-by-case analysis, while its weakness being that it applies only to a limited degree. The case of Chatla will be analysed in the perspective of the revisionist approach.

### CHATLA

Chatla is situated in the south-west direction of Silchar town of Cachar district of Assam at a distance of 18 kilometers. It is at an altitude of 39'6" MSL lying in 24°50' N latitude and 92°48' E" longitude. It is a low-lying area strewn with hillocks and having a fen type of topography. Some of these hillocks are being used to grow tea plantations. Therefore, surface run off from these upland areas drain into the Chatla basin. Further, Ghagra, a tributary of Barak river overflows in Chatla when it gets flooded. Since the drainage in Chatla is poor, large water spreads to an area of about 1,750 hectares during the monsoon months. When the areas get submerged under water for more than six months, the small hillocks on which villages are located become islands and villages commute by country-peddled boats. Motored boats are also used to cover long distances. However, during the winter season, when the water gradually recedes or dries up, the area becomes free from water logging and boats are abandoned.

The average rainfall in Chatla from 1994 to 1999 indicates the following trend: November to February (winter) - 19.16 mm, March to June (summer) - 283.13mm, and July to October (rainy season) - 335.85mm. Thus, heavy rainfall is recorded during March to October in a year. The mean humidity in summer is 79.66 percent while it is 76.37 percent in winter. Thus, the area is quite humid because of frequent rains and marshy lands. And the average temperature during winter is 23.41°celsius while in summer is 27.51°.

The Chatla area remained uninhabited till 1963 till Bangladesh refugees, a fishermen community called Kaivartya, whose traditional life style has been profoundly associated with water and fish, settled there. In the village where they settled first, Harintilla, they were only 9 households with an approximate population of

23 in 1963. Within a short duration, the numbers got multiplied due to largescale migration. Now, in this particular village, there are 71 households with a population of 449. There are as many as 52 villages existing in the Chatla area.

### Main Private and Common Property Resources

Even though Kaivartyas are expert fishermen, they mainly depend on agriculture, where rice alone is cultivated. After their settlement in this area, the state government assigned 2.7 hectares to each family. Since it is an assignment, they are not allowed to sell it. But some transact sales informally without registration on the basis of trust and good will. They usually grow *boro* variety of rice during November - April that yields 142 - 160 kilograms per hectare. However, they always run the risk of losing crop, as even small amount of rain submerges the area. Nevertheless, rice is their staple diet, and land is the main source of living. Since each family possesses its own plot of land, it is private property. According to our estimate, the mean income of a family through agriculture is about Rs. 15, 500 whereas it is Rs. 13,500 from fishing.

This private property becomes common property for grazing goats, sheeps, buffaloes and cows. Besides, when floodwater enters the area, the water of Chatla also becomes a common property, as fishing is allowed any where with certain restrictions, which shall be discussed later. There are about 29 varieties of fish available; it is believed that the fish such as *wallgo attu*, *eutropichthys vacha* and *gudusia chapra* are becoming increasingly rare. The fish come along with water from various sources like river Ghagra, Barak and other feeder streams. Since there is a large sheet of water spread over a vast area that retreats very slowly back to rivers. Chatla is believed to be an ideal place for the fish to lay eggs. In order to facilitate the egg laying process, the Kaivartya make artificial tanks by digging earth and thus deepen certain areas. Further they also put up bamboo fences at certain strategic places so that some school of fish find their niche.

Near the hillocks or habitations, some individuals dig ponds over small areas where water gets collected for a long time even after the areas gets dried. In these ponds the individuals

cultivate fish that constitute the private property. Some make artificial channels from the stream Ghagra for drawing water to feed these private fishponds. They buy prawn and fish seed from the fish farm located near Nilambazar in Karimganj district. The seed is kept in a big aluminum pot containing water, which is stirred often. After reaching area, the seed is put in an enclosure of a fine mesh submerged under water. In about six weeks, when the prawns grow to a size, they will be transferred to the private ponds.

### Resource Management

It is said that some species of fish come to surface every day in schools just before sunrise. Most interestingly, during the full moon, around 2 a.m., the fish behave in a similar way. Taking the opportunity, the Kaivartyas go for fishing around this time. According to our estimation, out of the common property resource, fish worth of Rs. 85 are sold and almost all families use fish worth of Rs. 15 for domestic consumption per day. As regards to the private property resource, the quantity of fish for sale and domestic consumption is almost the same, worth of Rs. 5.00 during the season.

The Kaivartya fishermen use boats, a variety of nets and hooks for catching fish. There are mainly three types of nets: *mahajal*, *patanjol* or *fashijal* and *ghurrainmajal*. These nets and hooks are available in the Silchar market. Though earlier, the nets were hand made by the fisher folk, now the machine made nets are available in market. Even now some old folk make their own nets.

Being conscious of the danger of over exploitation of common resource, the Kaivartyas formed a Committee for fishing in Chatla on cooperative basis. All Kaivartya families inhabiting Chatla are members of this Committee by residence since those moved out cannot claim membership. It is also a matter of right of every Kaivartya of Chatla to prevent other from fishing in Chatla. If any non-member is found fishing, he will be either driven out or the fish / money realised by sale will be confiscated. These restrictions are strictly imposed.

The Committee meets at least once a year or whenever it is required. It has a President and other office bearers. All adult male members

participate in the meeting. The fishing rule states that fishermen should restrain themselves from fishing till it was officially declared in the Committee meeting. Generally fishing is not allowed for 60 to 75 days after the raise of water level in the area in order to allow the fish to grow to the minimum size.

On the particular day of meeting, they formulate regulations of fishing for that year. It is organised on democratic principle and every member enjoys the freedom of expression. It will be decided who will fish where and what type of net can be used in such a manner to one feels deprived or excluded. Any dispute in this regard has to be brought to the notice of the Committee whose decision is binding on every one, even though it does not have any statutory recognition. The annual meeting is concluded with the distribution of sweets. If any body violates any of the regulation is liable for serious punishment of forfeiting fishing rights through out the season or giving away all the fish to the affected party.

In case of privately owned ponds, in some cases, few households form an informal society by contribution of certain shares and also manage the pond collectively; renovate the pond, draw water, invest on fish seed and so on. They auction the fish of the pond among the members only.

### Environmental Changes

Fluctuation of rainfall is the chief characteristic feature of Chatla environment; as a result, availability of fish is uncertain. After the gradual increase of population due immigration as well as natural growth till 1971, the area has witnessed decline in population. This decreasing trend is due to reaching of the area to the optimum sustenance. It is felt by the people that the fish population has reduced gradually after 1970's. With the increase of population, the surrounding areas were lapped up for fuel. Thus there has been acute scarcity of firewood. Further, the rice that they grow is not enough to support them throughout year. So during the slack season, many of them migrate to Silchar where they engage in non-traditional occupations such as rickshaw pulling and other sundry manual works. Some had left the area once for all searching for livelihood.

### Strategies of Fishing

Since the arrival in Chatla the Kaivartyas used *mahajal* nets for few years. But later it is seldom used. It is used to catch big fish with this net, and it required a crew of about 12 to 14 fishermen and two boats and two canoes. The crew leader elected from the team enjoys absolute decisionmaking authority, and the crewmembers are brothers and usually recruited from the same clan dictated by kinship obligations. The catch is however, equally shared between the leader and other members. As the fish population decreased over the period of time, the use of *mahajal* also declined and also the number of crew also reduced to 6 or 7. It is because if there are more number of members, the share of each member at the end of the day does not commensurate their labour.

Gurrainajal net, which is mostly used these days, requires three members with the help of a boat to catch small fish. The *patanjil* or *fashi jal* is the next commonly used net. There are different types of *patanjil* or *fashi jal* nets, each having holes of different sizes to catch fish of different kinds and sizes. As each fisherman uses 14 to 16 nets simultaneously, it will not be possible for any one person to invest on 14 to 16 nets; there will be sleeping partners, i.e., one buys the net but lends to another. Thus the play of human resources based mostly on kinship and friendship is vital in fishing in Chatla.

The fishermen do not use the motorboats, as all cannot afford to either buy or engage them. As indicated above, the fishing is done night as well as day depending on the availability of the fish. They also use nets other than those mentioned above but they are not very important. They also use hooks, anglers and traps on individual basis and water resource. The adaptive strategies include change of nets, and also pisciculture. The latter practice came into existence to augment the situation of reduction in fish population; it was not practiced in the beginning. They even stopped making or selling of dry fish as the catch got reduced. Even though some of them deplore the use of nets having very small holes, as they scoop away all fishes, some argue it became inevitable. Thus, with the reduction of fish population the fishermen deploy different strategies.

### The Revisionist Approach and Chatla

The situation at Chatla can be better explained with the help of revisionist approach to the common property management. As regards to the interaction of 'physical and technical attributes', the first factor, we find that water is stocked in different privately owned ponds and the water becomes a common property in the area. Thus, there is a flexibility of individual and collective ownership. The second factor, 'decision making' arrangements is well maintained by the Chatla Committee. Decisions are made for equitable share of the common property as discussed above. With regard to 'pattern of interaction', the third factor; the inhabitants to stop over exploitation by using various kinds of nets adapt different strategies. Again in case of fourth factor 'out come' we also see the effective functioning of the Chatla Committee providing equal access to the common property to the members, equal rights to the members and dispensation of justice.

The case of Chatla points to the role of environment, which has been neglected by the revisionists. We have noted that with the change in the population and shortage of rainfall, the fish population decreased. As a result the fishermen started emigration and pressure mounted on the resources and various new strategies have been developed. The abundance, depletion and availability of resources are dependent on the environmental conditions and accordingly the exploitation of resources takes place.

Acheson (1989: 375) criticises Hardin's 'the tragedy of the commons' that common property does not mean absence of rights; he means to say that local people develop certain rights over common property so that resources would not be exploited indiscriminately. This is true in case of Chatla; the local people developed certain rights over the use of water and fish. As discussed earlier, there will be ban on fishing for sometime when water enters the area. Further, he criticises the idea that every where there is a level of technical capacity to overexploit resources, which means that the technical capacity everywhere does not lead to overexploitation. In case of Chatla, it may be partially true; people started using nets with very small holes to catch even small fish.

This change of technical capacity that is responsible for overexploitation of fish is not endogenously originated. With depletion of fish population, the population emigrated so that sustaining capacity of the area could remain constant. Though motorboats could be deployed, the fishermen refrained from it so that all would have access to the resources. Acheson also criticises the axiom that there is a general inability to craft local institutions for resource management. It is not entirely true in case of Chatla for, the Chatla Committee has been so far efficient to manage the fishing in the area. But it had no control over the increase of population and environment, that is, shortage of rainfall and floods in the area that resulted in the depletion of the fish population. In an effort to cope up with the situation, private properties also developed, so that fishing activity can be continued during slack season.

Finally, Acheson rejects Hardin's postulate that private property or government intervention represents a viable solution to resource management. But it can be argued from the data of Chatla that even private property can lead to over exploitation and private property cannot remain private always. It is seen that the private owners scoop away all the fish in an unsustainable manner and the private ponds get filled up with water when the area gets submerged. Whatever small fish remain in them become common property when the area is flooded. Thus, to some extent Hardin is right. But so far as intervention of government is concerned, it is not required in case of Chatla. However, the Kaivartiyas feel that government's help would enable them to sustain the resource. So far as the management is concerned, they are capable of managing themselves without interference from any outside agency. They seek government's help providing financial assistance for making banks or *bundhs*, building boats, establishing fish farms so that they need visit any place for fish seed. It has also been observed that some local individuals are interested in the interference of government in any manner for political reasons.

### CONCLUSION

Water and fish are important natural resources

in Assam, northeast India. The case study of Chatla in Cachar district of Assam reveals several interesting features of common property management in fishery. The study has adopted the revisionist approach of common property resource management for understanding the phenomenon of Chatla. The population growth in the area conjointly with the environmental changes has exerted pressure on the fish available in the floodwaters. To a large extent the local institutions and the nature of flood leading to common property and private property are enabling the local population for effective resource management. Acheson's criticisms against Garret Hardin's 'tragedy of common' are not entirely valid according to the data available from Chatla, and at the same time Hardin's postulates are also not absolutely correct. Therefore, researches with much more sophisticated and rigorous designs are required to be conducted to draw any tangible conclusions.

**KEY WORDS** Common Property Resource Management. Water Resource. Fisheries Management.

**ABSTRACT** This paper analyses the practices involved in common property resource management of a water source in Assam. The case study has helped to examine Garret Hardin's 'tragedy of common' following McCay and Acheson's revisionist approach for understanding of Common Property Resource Management. The study does not support entirely either Hardin or McCay and Acheson's theory. It pleads for rigorous studies in this direction for tangible results.

### REFERENCES

- Agarwal, A. and Narain, S.: *Towards Green Villages, A Strategy for Environmentally Sound and Participatory Rural Development* Centre for Science and Environment, Delhi (1989).
- Ashraf, J.: Man-Nature Relations in Medieval India. In: *Habitation and Environment*. S.K. Chandhoke (Ed.). Haranand Publications, Delhi (1994).
- Acheson, James M.: Management of common property resources pp. 351-378. In: *Economic Anthropology*. Stuart Plattner (Ed.). Stanford University Press, Stanford (1989).
- Arnold, J. E. M. and Stewart, W.C.: *Common Property Resource Management in India*. Oxford Forestry Institute, Dept. of Plant Sciences, Oxford (1991).
- Alchian, Armen and Harold Demsetz: The property rights paradigm. *Journal of Economic History*, **33** (1): 16-27 (1973).
- Berkes, Fikret.: A critique of the tragedy of the commons paradigm. *Paper read at the congress of the Anthropological and Ethnological Sciences*. Quebec City (1983).

- Berkes, Fikret: Fishermen and the Tragedy of the Commons. *Environmental Conservation*, **12(3)**: 199-206 (1985).
- Berkes, Fikret: *Common Property Resources: Ecology and Community-Based Sustainable Development*. Belhaven Press, London (1989).
- Bromley, Daniel W.: Property relations and economic development: The other land reform. *World Development*, **17 (6)**: 867-877 (1989).
- Bon, Emmanuel: Common Property Resources : Two Case studies. *Economic and Political Weekly*, July **15**: 2569-73 (2000).
- Ballabh, Vishwa and Kramer, A. Randall: Property rights, transactions costs and co-operatives in management of common pool natural resources. A survey of Indian Experience, Paper Presented at the *Workshop on Co-operatives in Natural Resource Management*, 7-11 December IRMA, Anand (1992).
- Beck, Tony and Ghosh, M.: Common Property Resources and the Poor. Findings from West Bengal. *Economic and Political Weekly*, January **15**: 147-153 (2000).
- Clark, Colin W.: The economics of over exploitation. *Science*, **181**: 630-634. Reprinted In : *Manaaging the Commons*. G. Hardin and J. Baden (Eds.): 1977. W.H. Freeman, San Francisco (1973).
- Das, P.K.: Dainik Sonar Cachar, Silchar dt. 12.04.99 (1999).
- Deb, Panna.: *Wetland Fishery and Fisherfolk: A Case Study in Cachar District, Assam*. M.Sc. Dissertation. Assam University, Silchar (1999).
- Devi, S.S., Gupta, A. and Dutta, B.K.: Energy Utilisation Patterns in the Chatla Wetland, Cachar, Assam. PP 164-175. In: *Renewable Energy Resources and Management*. R.P. Athparia, S. Sarma and S.K. Mukherjee (Eds.). Reliance Publishing House, New Delhi (1999).
- Demsetz, Harold: Towards a theory of property rights. *American Economic Review*, **57**: 347-359 (1967).
- Eggertsson, Thrainn: The economic rationale of communal resources. pp. 41-58. In: *Proceedings of Common Property Regimes: Law and Management of Non – Private Resources*. Vol. (1) As: The Agricultural University of Norway (1993).
- Gangstad, O. Edward: Water and Land use and Fish and Wild life Resources In: *Natural Resource Management of Water and Land*. Van Nostrand Reinhold, New York (1990).
- Hardin, G.: The Tragedy of the Commons. *Science*, **162**: 1243-48 (1968).
- Jodha, N. S.: Common Property Resources and the Rural Poor. In: *Social Ecology*. Ramchandra Guha (Ed.). Oxford University Press, Delhi (1994).
- Knudsen, Arej: *Living with the Commons: Local Institution for Resources Management*. Chr. Michelsen Institute. Bergen (1995).
- McCay, Bonnie J. : Common and private concerns. Paper prepared for the Nordiac Symposium. *Anthropology and Nature*, Thorshavn, Faroe Islands October, 28-30 (1993).
- Mishra H. R. and Srivastava, R.M.: *Model Village Development Scheme*. pp. 1-35. B.A.U. (1997).
- Neumann, John von and Oskar, Morgenstern.: *The Theory of Games and Economic Behaviour*. Princeton University Press, Princeton (1945).
- North, Douglass.: Markets and others allocation systems in History: The Challenges of Karl Polanyi. *Journal of European Economic History*. **6(3)**: 703-716 (1977).
- Oakerson, Ronald J.: A model for the analysis of common property problems. In: *Proceedings of the Conference on Common Property Management*, April 21-26, 1985. National Academy Press, Washington D.C. (1986).
- Ostrom, Elinor: *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge University Press, Cambridge (1990).
- Risely, H.H. : *The Tribes and Castes of Bengal*. Vol-2. K.P. Bagchi Publication, Calcutta (1984).
- Roy Burman, B.K.: Nature and structures of rural habitation. In: *Habitation and Environment*. S.K. Chandhoke (Ed.). Concept Publishing Company, New Delhi (1990).
- Sen, Aamrtya K.: Isolation, assurance and the social rate of discount. *Quarterly Journal of Economics*, **81 (1)**: 112-124 (1967).
- Trivedi, P.R., Singh, U.K., Sudarsharan, K'cherry and Tuteja K.T.: *International Encyclopedia of Ecology and Environment Vol. 1*. Indian Institute of Ecology and Environment, New Delhi (1994).
- Upadhyaya, K.K.: *Role of Extension in Rural Development and Poverty Alleviation Programmes*. Ashish Publishing House, Delhi (1994).

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