

# Village and Community Attitudes to the Management of Crocodiles in Papua New Guinea

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THE management of crocodilians in Papua New Guinea has been discussed in some detail in Chapter 8. Accordingly, this chapter concentrates on an area where I was working until two years ago — the Lake Murray District. It lies between the Fly and Strickland Rivers, close to the border with Irian Jaya. The two species of crocodiles present in Papua New Guinea are both found there.

There are many people who live in and around Lake Murray, mostly in small, isolated villages. The district has a prominent wet season, from November to May each year, and a dry season from June to October. The average rainfall is about 292 cm per year. Habitat types have been described in some detail by Phil Hall (Hall 1983). The Strickland and Fly Rivers give rise to vast swamplands, ranging from grassland swamps with *Pbragmites*, to mixed swamp woodlands. The freshwater crocodile *Crocodylus novaeguineae* is the most common species in the area, occurring throughout the basins of the Fly and Strickland Rivers, in all major creeks, lagoons, lakes and rivers systems. The saltwater crocodile *Crocodylus porosus* occurs throughout the District, but it is always in much lower numbers.

Lake Murray is a remote area in which most forms of agriculture are inappropriate. The crocodile skin trade is the biggest cash income earner for the village people. Rubber, chilli and fishing are becoming important, but the crocodile skin trade still makes more money — about 80% of the district's income.

In the early 1960's, the shortage of crocodiles in Australia had drawn hunters and traders to Papua New Guinea, and additional hunters and traders were operating from across the border with Irian Jaya. Numbers of crocodile skins being exported increased dramatically, then began to decline. In the mid-1960's the Government of Papua New Guinea became concerned that the crocodile industry would collapse from over-exploitation. A formal

crocodile policy was devised which favoured villagers rather than expatriot hunters, and which favoured raising small animals in preference to killing and exporting small skins. The Lake Murray Crocodile Farm was set up by the Ecology Section of the Department of Primary Industry in 1969. It initially had pens for approximately 200 crocodiles.

Lack of experienced staff was setting back the implementation of Papua New Guinea's crocodile management policy, and so the Government successfully requested UNDP and FAO assistance. It came in the form of a field project entitled "Assistance to the Crocodile Skin Industry" in 1977. Under this programme, the Lake Murray Crocodile Farm was developed for extension work, mainly directed at crocodile farming at the village level. Some of the programmes started at Lake Murray included training in both wildlife management and crocodile farm management.

Both the UNDP/FAO Officials and the Government of Papua New Guinea thought farming at the village level was workable. In 1978, extension offices based in Lake Murray had actually set up 31 farms within the district; 10 larger community farms and 21 small crocodile farms scattered throughout the area.

Apart from UNDP actually setting up these farms, a considerable effort was devoted to a financial scheme whereby villagers could get loans to start farms. In hindsight, there was perhaps too much effort put into the establishment of a village crocodile farming network. In 1978 we started realizing that the small farms were not working, and the large business and community farms were not yet proven. They had been started with good intentions and a lot of hard work, but 3-4 years was too long for villagers to have to wait for monetary gains from their work. There was also a problem of tradition. Papua New Guineans have been hunting crocodiles all their life, but village farming was a very unique situation introduced from the outside. At

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times there were arguments and fights over the management of farms, which resulted in the managers of farms and/or the most hard-working people involved with them, pulling out.

The crocodile skin trade has an unfortunate history. In the early days, skins derived from indiscriminate hunting were exchanged for goods — store items, like bush knives, tobacco, rice, tin fish, tin food, torches and batteries. Numbers of bigger crocodiles were greatly reduced and the industry came down to a wasteful export of small crocodiles. The crocodile farming network was introduced to rectify this, but not all village farms were capable of rearing stock.



Fig. 1 A live purchase network was introduced into Papua New Guinea to move crocodiles from village hunters to larger, commercial farms.

In 1978, a live crocodile purchase network was introduced, to move small live crocodiles quickly from the village farms. This made it easier for villagers to earn cash from crocodiles, and the villagers could earn more money by selling small crocodiles alive to the Government demonstration farms, like that at Lake Murray, than they could by killing and skinning them. Live crocodile buying patrols were incorporated into the extension work of UNDP and FAO personnel. They paid high prices for animals and it was the policy of the Government to buy and pay for them on the spot.

However, farms like Lake Murray quickly became overstocked. The Government issued licences to two nationally owned business companies, one in Port Moresby and the other in Lae, to start farming crocodiles on a large commercial scale. The live purchase scheme already established provided the main source of animals to these commercial farms.

If one summarizes, it can be seen that in the past the national crocodile project had emphasized village raising, and the buying of live crocodiles within the network of village, Government and

Commercial farms. In 1983, all efforts by villagers to raise crocodiles to culling size in the Lake Murray District were actively discouraged.

This change in policy followed a review of the status of farms in the Lake Murray District. Seventeen farms were visited, and their condition had deteriorated. Some 104 crocodiles had escaped through fences broken due to the rotting poles. Four of the villages had been shifted four times in three years, making it very hard for correct maintenance of a permanent, sedentary crocodile farm.

In Lake Murray, the Government demonstration farm has now become a commercial farm. A trust account has been opened and all monies from the sale of live crocodiles, which was Government revenue, now goes back into that trust account. When people were encouraged *not* to farm crocodiles, other buying stations were set up. With improvements in radio networks and assistance from the patrol officers in the area, there is now better contact, and, for example, a barge can be sent to Lake Murray when there are say 300-400 crocodiles ready. This we see as a more successful and efficient approach, as it requires no additional investment on the part of the hunters for holding pens and the like.

The major difficulty with the live purchase network is inadequate "cash in hand" for buying crocodiles. There is simply not much business activity in the Lake Murray district, and, for example, the manager of the Lake Murray Farm last year bought about 400 crocodiles that he had not paid for by the end of the year. Transportation is another problem. There is mortality from improper handling and packing of live crocodiles at the village level. Crocodiles may also be held too long with little feed, water, fence maintenance etc. Hunters still often find it easier to kill crocodiles and store the skins than to trade in live crocodiles. Every effort is made by the Lake Murray crocodile farm to buy every crocodile in a village holding pen.

Lake Murray Crocodile Farm is able to feed and maintain about 1000 crocodiles. The farm was developed slowly and did not have any power for many years. Now it has two freezer units. Excess food used to be fed during wet seasons — now that excess can be frozen.

The problems that have faced extension work, and the reasons that such a large number of farms in the Lake Murray district failed, are both attributable to the way in which the farming network was introduced. Government did not look closely enough into the social structure of village people. Most of the villagers in Lake Murray are quite nomadic people and they leave their villages to go and collect and hunt food. Within that time either the pens are broken or thieves may steal the crocodiles. These are perhaps the main reasons why the original village farming concept failed.

## DISCUSSION

*Angus Bellairs:* When you mentioned crocodiles were overfed in the wet season. Was the food not eaten or did the crocodiles become overly fat?

*Kayama Sinba:* The excess food was not eaten.

*Angus Bellairs:* That is interesting. A crocodile stops eating, whereas animals like dogs often seem to go on eating indefinitely.

*Grabame Webb:* How did the villagers take to the failure of the village farm concept. Did they say "well that's the way life goes" or did they blame the extension workers and lose faith in their advice?

*Kayama Sinba:* Initially extension work was very intensive and villagers were paid a lot of money for crocodiles as a consequence. Later, the level of extension work could not be maintained and villagers lost interest. But there are scattered educated people throughout the area and they talk about the practical need to conserve crocodiles. It is important to the villagers — an economic resource that must stay in society.

*Tony Press:* What were you feeding the crocodiles at Lake Murray?

*Kayama Sinba:* Anything that was caught in our six nets: sharks, barramundi, other fish — anything.

*Romulus Whitaker:* I've just been working on the other side of the border in Irian Jaya, and I can confirm that some trade is going on across the border right now. Small skins go across the border to Papua New Guinea and large over-sized skins come back.

*Kayama Sinba:* Yes, I know we have problems with poachers from across the border.

*John Lever:* When you say that the village farms have failed to some extent it should be remembered that when they were set up originally the village farms were envisaged as being nothing more than a

collection service. Somewhere along the road of so-called progress it became expected that the village farmers would hold the crocodiles for three or four years and turn them into larger skins. The village farm concept was envisaged as a means through which the trade in skins could be converted to a trade in live crocodiles.

*Malcolm Douglas:* Does anyone know what the policy on crocodiles is in Irian Jaya?

*Romulus Whitaker:* I can comment on the policy and what is actually happening. The killing and export of crocodiles has been banned since 1980, but there are a number of loop-holes in the legislation which do allow skins to leave legally. This is difficult to understand, because Indonesia is a signatory to CITES and 5% of the skins leaving are *C. porosus*. Never-the-less, there is little to be gained from being overly critical and one hopes that with encouragement and assistance, a crocodile management programme will be developed there.

*Goff Letts:* What we have heard from Zimbabwe, Venezuela, India and now Papua New Guinea makes it clear that many of the crocodile management problems encountered have little or nothing to do with international trade — they cannot be solved by international treaties. They can only be solved by people on the spot, the management authorities and interested segments of the community working together with proper management plans. The lesson is a clear one that the parties to CITES should appreciate — crocodile conservation will ultimately depend on the people working at a ground roots level, and these are the ones who need support.

## REFERENCES

- HALL, P. M., 1983. Distribution, abundance and reproduction of crocodiles *C. novaeguineae* and *C. porosus* in Lake Murray District, Papua New Guinea. Unpublished M.Sc. Thesis, Univ. of Idaho, Moscow, Idaho.