

THE FIRST WILDLIFE RESCUE OPERATION  
IN THAILAND

Seub Nakhasathien<sup>1)</sup>

บทคัดย่อ

งานช่วยชีวิตสัตว์ป่าในประเทศไทยได้มีขึ้นครั้งแรกที่เขื่อนเชี่ยวหลาน จังหวัดสุราษฎร์ธานี เมื่อเดือนมกราคม ๒๕๒๘ เขื่อนเชี่ยวหลานเพื่อการผลิตกระแสไฟฟ้า จะทำให้พื้นที่ป่าคงคิบบนที่ลุ่มต่ำริมลำน้ำคลองและถ้ำน้ำท่วมคิบบนพื้นที่โดยประมาณ ๑๖๕ ตารางกิโลเมตร เมื่อระดับน้ำสูงถึงระดับเก็บกักสูงสุด ๘๕ เมตรจากระดับน้ำทะเลปานกลาง และทำให้เกิดเกาะรวมทั้งสิ้น ๒๔๑ เกาะ ในจำนวนนี้ ๑๖๒ เกาะ จะเป็นเกาะถาวร เกาะขนาดใหญ่ที่เหลืออยู่มีขนาดพื้นที่ตั้งแต่ ๐.๗๔-๑.๒๘ ตารางกิโลเมตร

ในระหว่างการก่อสร้าง งานช่วยเหลือสัตว์ป่าตกค้าง ซึ่งดำเนินการเป็นครั้งแรกในประเทศไทย ได้ทำการช่วยเหลือสัตว์ป่ารวมทั้งสิ้น ๑,๓๖๔ ตัว โดยเป็นสัตว์เลี้ยงลูกด้วยนม ๕๘๖ ตัว นก ๕๘ ตัว สัตว์เลื้อยคลาน ๗๒๐ ตัว การดำเนินงานอยู่ระหว่างเดือนเมษายน ๒๕๒๘ ซึ่งเดือนกันยายน ๒๕๓๐ สัตว์ป่าที่ได้รับการช่วยเหลือเสียชีวิต ก็คเป็นสัตว์เลี้ยงลูกด้วยนม ๔๑ ตัว และนก ๒ ตัว แต่ยังมีสัตว์ที่พบตายเนื่องจากการจมน้ำและอดอาหารในขณะที่ปฏิบัติงานค้นหาและช่วยเหลือ สัตว์ป่าที่เหลือรอดชีวิตอยู่ได้รับการปลดปล่อยขึ้นฝั่งในเขตรักษาพันธุ์สัตว์ป่าคลองแสง และอุทยานแห่งชาติเขาสก ซึ่งอยู่โดยรอบของอ่างเก็บน้ำ

การดำเนินงานช่วยเหลือสัตว์ป่าที่เขื่อนเชี่ยวหลานอาจจะถือว่าเป็นการแก้ไขผลกระทบที่เหมาะสม แต่แท้ที่จริงแล้วยังไม่อาจถือได้ว่าประสบผลสำเร็จ เนื่องจาก (๑) การดำเนินการยังไม่แล้วเสร็จตามแผนการที่กำหนด และระดับน้ำยังไม่สูงถึงระดับเก็บกักสูงสุดที่ ๘๕ เมตร เหนือระดับน้ำทะเลปานกลาง (๒) ไม่มีการสำรวจถึงชนิดและปริมาณของสัตว์ป่าที่จะได้รับผลกระทบก่อนที่จะดำเนินการช่วยเหลือ (๓) สัตว์ป่าที่ได้รับการช่วยเหลือและปล่อยเข้าไป ยังไม่ได้รับการติดตามศึกษาว่าจะสามารถปรับตัวให้มีชีวิตอยู่รอดต่อไปในพื้นที่แห่งใหม่หรือไม่ และ (๔) สัตว์ป่าที่ยังหลงเหลืออยู่บนเกาะถาวรยังมีได้รับการศึกษาติดตามการเป็นอยู่แต่อย่างใด

ดังนั้น การดำเนินการช่วยเหลือสัตว์ป่าในกรณีเช่นนี้ สมควรมีการศึกษาชนิดและปริมาณ ตลอดจนสภาพที่อยู่อาศัยเฉพาะของแต่ละชนิดอย่างละเอียดเสียก่อน การดำเนินการควรมีเวลานานพอสมควร และสมควรมีการติดตามความเป็นไปของสัตว์ป่าหลังการปล่อย เพราะไม่เช่นนั้นแล้วก็เป็นเพียงการแก้ปัญหาเฉพาะหน้าให้ลุล่วงไปเท่านั้น

ABSTRACT

The first wildlife rescue operation in Thailand was recorded at Chiew Larn Dam, Suratthani province, in January 1985. The Chiew Larn hydro-electric dam inundated 165 square kilometres of the largest area of lowland evergreen forest left in Thailand, creating 241 islands of which 162 would be permanent once the reservoir reached its peak storage level at 95 metres above sea level. The six largest of these islands would range in size from 0.74 to 1.28 square kilometres.

During construction of the dam, a concerned wildlife rescue operation was undertaken for the first time in Thailand. Between April 1986 and September 1987, 1,364 animals were

<sup>1)</sup> Wildlife Conservation Division, Royal Forest Department, Bangkok, Bangkok 10900

rescued (586 mammals, 58 birds, 720 reptiles). Forty-one mammals and two birds died following capture, others were found already dead by drowning or starvation. The survivors were released into the wildlife sanctuary or national park lying to the East and West of the reservoir.

Despite these apparently satisfactory results, it argued that this project cannot rightly be considered a success because (i) it could not be completed within the time allowed and no animals have yet been rescued from the islands that would remain once the water reached 95 metres (msl), (ii) no survey was carried out to establish the number and density of species occurring in the area so it is not known what proportion of the total number of animals affected by the dam was encountered by the rescue team, (iii) animals were not monitored after being released so subsequent mortality rates are not known but are presumed to have been high, (iv) there are as yet no plans to monitor or manage the animals left stranded on the islands though their survival prospects are poor.

It was also argued that future wildlife rescue operations must be preceded by a comprehensive survey of the area to be affected, must be given adequate time to do the job properly and must be followed by an equally comprehensive project to monitor the relocated animals. Even then, a wildlife rescue operation cannot compensate for the loss of wildlife habitat and should not be considered a strategy for nature conservation.

## INTRODUCTION

The Chiew Larn Dam is the 13th hydro-electric dam to be built in Thailand and the fifth largest such project undertaken to date by the Electricity Generating Authority of Thailand (EGAT).

Construction of the dam was approved by the Cabinet in February 1981, with the proviso that plans should first be drawn up to mitigate its most serious environmental impacts (as required by the big funding agencies).

Eleven such plans were submitted (for fisheries, wildlife rescue, commercial logging, forest clearance, forest and watershed protection, village resettlement,

archeological sites, salinity control, soil quality control, prevention of water-borne diseases and monitoring environmental changes) and in October 1981, the project was given the final go-ahead.

The purpose of the Chiew Larn Animal Rescue Project was, of course, to minimise the most immediate impact of the dam to local wildlife. As such, it would seem to have no obvious bearing on the tourism potential of the reservoir and therefore this paper will address the "nature conservation" element of the conference theme only.

In this context, I would like to raise two questions in particular. Firstly,

### BACKGROUND

was the Chiew Larn Rescue Project a successful project? Secondly, does any wildlife rescue operation have a role to play in nature conservation?

The Chiew Larn Project was located in Surat Thani province, southern Thailand. The dam blocked the Khlong Saeng River and will inundate 165 square kilometres of lowland rain forest, thereby bisecting the largest remaining area of this type of forest in Thailand (Conservation Monitoring Centre for Thailand).

An Environmental Impact Assessment survey was carried out for EGAT in 1979 by Team Consulting Engineers Co. Ltd. This report (EGAT 1980) maintained that 122 animal species (mammals 38, birds 69, reptiles 11, amphibians 4) occurred within and around the reservoir area. However, a Royal Forest Department survey of the same area, carried out in 1984 (Nakhasathien 1984), found a total of 237 species (mammals 47, bird 162, reptiles 21, amphibians 7). This survey was not primarily concerned with wildlife at all

but with establishing what measures should be taken to protect the surrounding forests following the dam's construction. Neither survey gave an accurate account of the wildlife occurring within the Chiew Larn watershed. The wildlife rescue team found that EGAT's EIA was deficient by 64%, the Royal Forest Department's report by 30%

The topography of this region is very hilly, ranging from below 20 metres (msl) to well over 1,000 metres (msl.) The area is characterised by an east-west belt of near vertical limestone peaks intersected by steep valleys and small pockets of level land.

For this reason, the level of the reservoir rose quickly and the stretches of water separating the islands from the mainland were soon too deep for many animals to venture across.

The reservoir began to fill in April 1986 and in nine months the water level had risen from 13.5 metres (mls) to 75 metres (mls). When the water reached 40 metres (msl) in mid-May, the first island was formed. By the time

the water reached 60 metres (msl) around August, that one was submerged but 23 more had formed. By December (the end of the rainy season), those too were gone but had been replaced by 55 new ones.

The reservoir is supposed to rise each year to 95 metres (msl) and have an annual draw-down of up to 33 vertical metres. When that happens, the present 55 islands will also be submerged but 162 permanent ones will appear in their stead. Of these, the six largest will range in size from 0.74 to 1.28 square kilometres. To date, however, the water level has not risen above 78 metres.

The Animal Rescue Project was financed by EGAT with an initial 1.5

million baht, later increased to 1.8 million. It got underway in January 1985 but the first fifteen months were taken up with preparatory investigations and planning. I was assigned to the project at the beginning of April 1986 and after two or three weeks spent assembling a field team and field equipment, we began the rescue work and continued without a break until September 1987 when the Dam project was formally closed.

There were twenty-one people in the rescue team; five officers and six staff rangers of the Wildlife Conservation Division (Royal Forest Department) and ten local workers. None of the team had previous experience of a wildlife rescue operation and none was a qualified veterinarian.

### STRATEGY AND METHODS

The reservoir began to fill in April 1986 with the coming of the rainy season. By mid-May, there was one island to tackle; by August, a further 23 and by December, another 55. At that point the water level

settled at around 78 metres (msl), since when it has fluctuated between 73 metres (msl) and 78 metres (msl) but had never reached the maximum predicted level of 95 metres (msl).

Islands were searched for stranded

animals as they formed, starting with the smallest because these would be submerged or run out of food first. Rescue work was carried out by day and by night using two motor boats (11 m × 1.70 m). The species rescued included mammals, birds and reptiles but not amphibians. Nocturnal animals (including seow, slow loris, lemurs and civets) were sought at night using a spotlight and light intensifier binoculars, but where possible were not captured until the following day. Animals were released as quickly as possible after capture but if any appeared weak or sickly, they were put under supervision at the project's raft headquarters.

Animals were caught in different ways depending on the species :

**1. By hand or loop net ;** arboreal mammals (squirrels, gibbons, langurs) were first manoeuvred to the water's edge and then caught by hand or hand-held net.

**2. Box trap ;** this was used for ground feeding mammals (ground squirrel, rat, mouse deer, porcupine,

cat). The traps were baited as appropriate for the different species.

**3. Live snares ;** these were sparingly used because of the time and risk involved, but a clouded leopard and several porcupines were successfully caught this way.

**4. Drop nets ;** this was used with hoofed mammals (mouse deer, barking deer and serow). The size and dimensions of the net were different for each species.

**5. Mist nets ;** for the ground dwelling and low-flying birds. All those caught were obligate lowland forest species.

**6. Snake sticks ;** most snakes (python) were caught in trees or on land using a loop net or snake stick. Cobras were only ever caught in the water using a loop net.

The larger mammals (serow, clouded leopard, barking deer), whether caught by box trap, net or snare, were given a modest dose of tranquillizer immediately following capture.

The time needed to catch each

animal or clear one island varied greatly and depended on the size, topography and vegetation of the island, the species and nutritional status of the animal

concerned, and the weather. Quite often it took one or more days to catch just one animal, particularly the larger mammals.

**RESULTS**

Over a period of eighteen months from April 1986 to September 1987, a total of 1,364 mammals, birds and reptiles were rescued from 79 islands formed as the water level rose in the Chiew Larn Reservoir from 13.5 to 78 metres above sea level. These islands comprised a total area of 2.55 square

kilometres.

Of these 79 islands, 24 are now underwater and the remaining 55 will go under once the water reaches the intended level of 95 metres (msl). Thereafter, there will be 162 permanent islands covering a total land area of 14.06 square kilometres.

Table 1. Number of species and animals captured and number of deaths during the Chiew Larn Rescue Operation.

	No. of species	No. of animals	Deaths*		
			1	2	3
Mammals	37	586	41	11	30
Birds	30	58	2	—	—
Reptiles	49	720	—	—	—
	116	1,364	43	11	30

- Note: \* Deaths
- 1) died following capture & before being released. Causes: stress, injury, fever, malnutrition, blocked gut, exhaustion.
  - 2) found dead from starvation or wounds or killed by predators or poachers.
  - 3) found drowned

In the course of eighteen months, the Rescue Project came across a total of 316 different species of mammals, birds and reptiles in the reservoir area, but were able to rescue only 116. So the rescue operation was able to help only 36.7% of the mammal, bird and reptile species known to occur in the reservoir area.

Table 2. The endangered and threatened species of animals caught during the Chiew Larn Rescue Operation.

Common Name	Scientific Name	No.
1. Pig-tailed macaque	T <i>Macaca nemestrina</i>	4
2. stump-tailed macaque	T <i>M. arctoides</i>	1
3. Crab-eating macaque	T <i>M. fascicularis</i>	8
4. Banded langur	T <i>Presbytis melalophos</i>	7
5. Dusky langur	T <i>P. obscura</i>	115
6. White-handed gibbon	E <i>Hylobates lar</i>	17
7. Malayan pangolin	T <i>Manis javanicus</i>	10
8. Black giant squirrel	T <i>Ratufa bicolor</i>	5
9. Lesser giant flying squirrel*	T <i>Petaurista elegans</i>	1
10. Large black flying squirrel*	T <i>Aeromys tephromelas</i>	1
11. Asiatic black bear	T <i>Selenarctos tibetanus</i>	1
12. Binturong*	T <i>Arctictis binturong</i>	1
13. Clouded leopard*	E <i>Neofelis nebulosa</i>	1
14. Serow*	E <i>Capricornis sumatraensis</i>	7
		Total = 179
15. Storm stork*	T <i>Ciconia stormi</i>	2
16. Rail-babbler*	T <i>Eupetes macrocerus</i>	1
		Total = 3

Table 2. (Cont.)

Common Name	Scientific Name	No.
17. Spiny hill turtle*	T Heosemys spinosa	32
18. Common flying gecko*	T Ptychozoon lionatum <sup>1</sup>	18
19. Brown Spiny Lizard*	T Acanthosaura armata	8
20. Black jungle monitor*	T Varanus rudicollis	3
21. Yellow tree monitor	T V. bengalensis	18
22. Blood python*	T Python curtus	1
23. Rat snake*	T Ptyas korros	2
Total		82

Note : T = Threatened      E = Endangered

(Bain & Humphrey 1982 and IUCN 1974, 1979a, 1979b)

\* = Species not included in EGAT's 1980 EIA Report

It should also be noted that although the Greater Mouse Deer is not ranked officially as a threatened species, it is nonetheless extremely rare in Thailand, both in the wild and in captivity. Six were caught, but all six died.

Table 3. The animals which died following capture or were found dead on the islands or in the water.

Common Name	No. Caught	Deaths in Captivity	Found Dead
Serow	7	7	-
Samber Deer	1	1	-
Barking Deer	4	2	1
Greater Mouse Deer	6	6	-

Table 3. (Cont.)

Common Name	No. Caught	Deaths in Captivity	Found Dead
Lesser Mouse Deer	172	13	7
Tapir	-	-	1
Common Palm Civet	9	1	2
Dusky Langur	115	8	10
Banded langur	7	-	3
Pig-tailed Macaque	4	-	1
White-handed gibbon	17	-	2
Slow Loris	9	-	5
Malayan Pangolin	10	-	1
Malayan Porcupine	14	-	3
Ground squirrel	1	-	1
Red-cheeked Flying Squirrel	1	1	-
Grey-bellied Flying squirrel	115	2	4
Chestnut-breasted malkoha	1	1	-
Green broadbill	1	1	-

#### Causes of death

Most animals were released soon after capture, but some, mainly mammals, were judged too weak or too sickly to release straightaway. These were put into care for as long as seemed necessary, but most were released within the next few days. However, 41 mammals and two birds died in care.

The Rescue Project had no veterinarian on the team but a few post-mortems were done, when time allowed, by the local provincial vet. Even so, the direct cause of death often remained a mystery.

All seven serow appeared to die from the combined effects of stress, exhaustion and malnutrition. One was

pregnant. A pregnant Greater Mouse Deer died from shock within 15 minutes of capture but the other five died after five to fifteen days for no apparent reason. The same was true of all the Lesser Mouse Deer. They all ate well and appeared healthy except for a few minor wounds, but post-mortems did reveal that some had bled internally. Others may have died of tetanus. The Sambar Deer was found floundering in the reservoir after falling from a ledge 70m above the water. It had multiple broken bones and died twelve hours later. Both Barking Deer appeared to have died from wounds incurred during capture. One gave birth to a still-born fawn two days before she died. One of the Dusky Langurs died from

pneumonia and a congested gut. The rest died from wounds and malnutrition. Most of them were rescued from the bare branches of stranded trees after several days without food or protection from the sun and the rain.

Most of the primates that were dead when found were hanging from the branches of leafless, drowning trees. Other were found with bullet wounds or were floating in the water. The Tapir was killed by poachers, the Barking Deer by the Clouded Leopard that was subsequently captured. Most of the Lesser Mouse Deer drowned, the rest were killed by predators. The Civet, the Porcupine and the Pangolin were all found dead on the islands from causes unknown.

### PRACTICAL PROBLEMS IN THE FIELD

The wildlife rescue operation was hampered by a number of factors :

1. Because the two preliminary surveys had not identified all the species occurring in the reservoir area, the rescue team was inadequately prepared for

dealing with some of the species encountered. In eighteen months, the rescue team came across 338 species. EGAT's EIA report listed only 122 and the Royal Forest Department survey only 237. So, 101 species were encountered

unexpectedly, including the Clouded Leopard.

2. The rescue team did not include a trained veterinarian or anyone who had worked before on a rescue operation so inevitably, mistakes were made which might have been avoided had there been someone with previous experience of the problems encountered.

3. There were no proper arrangements near at hand for keeping any of the animals in captivity, either for short or long-term periods. The small animals kept for only a day or two were held in cages on the project raft. The rest were taken on a half-day journey by boat and truck to the local wildlife centre. It is probable that some animals died unnecessarily because of this.

4. The vegetation on the islands was dense and troublesome to negotiate and it was often as difficult and time-consuming to find the animals as it was to catch them.

5. In addition, the terrain on most of the island was rough and steep

because the substrate in this area is predominantly limestone. It was frequently hard to follow animals across an island, particularly animals, like the monkeys and serow, well used to traversing rocky slopes.

6. Rain falls in southern Thailand for almost nine months each year, usually heavily. Rescue work was much disrupted by rain.

7. The rescue operation was also inconvenienced by leeches and mosquitoes which emerge in great numbers during the rainy season. These caused no illness, but much discomfort.

8. By February 1987, almost 300 villagers had settled in the reservoir. The frequent sound of chain-saws, motor-boats, fire-arms and voices made the animals increasingly wary and rescue work more and more difficult.

9. The rescue project was not provided with communication equipment which proved to be a major handicap.

10. The field operation might have been better prepared had a senior member of the rescue team been able

to take part in the early decision-making process. As it is, the rescue team was assigned to the task well after the plans

had been fixed by people not required to carry them out. Many of these plans were not well thought out.

## DISCUSSION

One thousand, three hundred and sixty four animals were rescued and ninety seven percent of these were released onto the mainland to east or west of the reservoir. Do these results mean that the Chiew Larn Wildlife Rescue Project can be labelled an unqualified success?

The answer must, I think, be "no", for at least four reasons:

1. Of the animals which died as a direct result of the rescue operation, almost half were from threatened species, animals that Thailand can least afford to lose. The rarest of these - the Serow and the Greater Mouse Deer - incurred 100% mortality.

2. Neither of the two surveys carried out in the reservoir area attempted to find out the population densities of the species found to occur there. As a result, it is impossible to estimate

what proportion of the animals affected by the reservoir were helped by the rescue operation. It may be that the rescue operation encountered only a fraction of the total number of animals disrupted by the flooding and that a far larger number either rescued themselves or died undetected.

3. Animals were not monitored in any way after being released on the mainland, so it is impossible to know how many of them survived the relocation. It is probable, however, that the mortality rates were high for most of the species released because:

- (a) The habitat into which the animals were released is not exactly the same as that from which they were taken. The river valley which is now under the Chiew Larn Reservoir was a single large area of level, lowland evergreen forest. The surrounding area

is higher, and consists of much hillier terrain cross-cut by a range of limestone peaks interspersed with isolated pockets of level land. This habitat is likely to have been either unsuitable or at least sub-optimal for many of the animals released there.

(b) Other animals may have found the habitat suitable but already occupied by others of the same species. In the competition for available food or territory, the new arrivals would have been at a disadvantage. They were strangers to the area and were already weakened by hunger and stress. Many of them will have died from injury or opportunistic infections made worse by malnutrition.

4. Only a fraction (15.4% or 2.55 sq. km) of the total island area (16.61 sq. km) could be worked in the eighteen months allocated to the rescue operation. This is partly because it does take a lot of time to catch frightened wild animals and partly because some of the islands were still too large to work effectively at that time. When the water level rises to the planned maximum level of 95 metres (asl), these islands will become smaller and a rescue operation would then be feasible. However, to date there are no plans to monitor or, if necessary, to rescue the animals on these islands although their survival prospects are poor indeed.

### CONCLUSION

The Chiew Larn Wildlife Rescue Operation was undertaken in an attempt to mitigate the damage the dam would do to the wildlife living in the flood zone. The most serious consequence of the dam, however, was the loss of the largest remaining area of lowland ever-

green forest in Thailand. No rescue operation can compensate for the long-term impact of such a loss. A wildlife rescue operation cannot, therefore, be considered a strategy for nature conservation. It can only attempt to alleviate the most immediate and, from a

conservation point of view, the most minor consequence of a hydro-electric project.

The Chiew Larn Rescue Operation was too incomplete to be considered a truly successful project even recognising its limited scope. The preparatory surveys were inadequate, the time allowed for rescuing animals was too short and there was no provision for

monitoring animals after they were released.

If future wildlife rescue operations were to correct these failings, they could make some contribution to nature conservation in Thailand by providing useful information on the adaptability and ecological requirements of some of Thailand's native species.

### RECOMMENDATIONS

I would like to recommend that any future wildlife rescue operation which is carried out as part of a hydro-electric project should include the following elements :

1. A comprehensive survey of the area to be inundated and the area into which animals will be released. This survey should not only establish what species occur in the two areas but should also attempt to estimate the population density and distribution of each one. This data would enable :

- (a) Proper preparations to catch and, if necessary, accommodate animals of each species,

- (b) Some consideration as to whether the proposed release area is the right habitat or has enough room for extra animals of any given species, the large mammals in particular,

- (c) An estimate of what proportion of animals occurring in the flood zone were helped, or encountered, by the rescue team.

2. Enough time to finish the rescue work-or a bigger team, whichever is the more feasible. More time may be more important than a bigger team if, as in the Chiew Larn case, the reservoir fails to rise to the maximum

predicted level within the rescue operation's time span and some of the islands are still too wide to work effectively.

3. A radio communication system (walkie-talkie) to link the two rescue teams which have to work in collaboration on either side of an island with each other and with their field base.

4. A full-time veterinarian with experience of wild species.

5. A follow-on project to monitor by radio-tracking and tagging the survival rates of the animals released. This should be done for at least a year or for as long as is useful or feasible. Animals which do not survive at all are likely to die within days and weeks rather than months, but others may fail to adjust well enough to breed which is a different kind of mortality.

6. A follow-on project to monitor the animals remaining on the islands too large to clear. In the short-term, these may run out of food, especially in the dry-season. Even if not, in the longer term they may over-exploit the island if their numbers increase, or they

may incur the deleterious consequences of in-breeding.

In addition, I strongly recommend that in future, the National Economic and Social Development Board should insist that all logging work be completed by the time the reservoir begins to fill. Officially, this should happen anyway. In practice, it rarely does. At Chiew Larn, logging still goes on even though the reservoir began to fill, as planned, at the beginning of April 1986. This not only makes it more difficult to prevent illegal logging and poaching, it is also disruptive to a wildlife rescue project.

I would also like to recommend, for the same reasons, that if villagers are to be allowed to settle in the reservoir to fish, they should be required to moor their rafts in one or two restricted areas only. At Chiew Larn, rafts are tucked away all round the several hundred kilometre perimeter of the reservoir, making it almost impossible to stop these settlers from poaching

in the forests around. If these people lived in floating villages at the lower end of the reservoir, it should be possible to check their boats for firearms when they travel up the reservoir in search of fish.

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