

Lessons Not Learned at University #5

When is the Allowable Cut not simply area times yield?

The Consultant was on a United Nations Food and Agriculture Organisation (FAO) mission to the Sundarbans in Bangladesh, that magnificent mangrove forest at the head of the Bay of Bengal. The area is about 300 x 100 km, with the Ganges and Brahmaputra rivers flowing through the delta to the sea. The khals or rivers and creeks have steep banks of deep mud and saucer-shaped areas between the banks are inundated at high tide. The mangrove forest is quite productive. Sundri is cut for sawlogs and Gewa for small sawlogs and as furnish for a masonite style hardboard. The Sundri trees can be up to 25 m high and 50 cm in diameter. It is not nice forest to work in as the only access is by boat, and climbing from a boat into the forest up the slippery silt banks can be challenging at low tide. At high tide it is almost impossible to walk through the forest's pneumatophores.



The forest has a superb in-built protection system. This is the Royal Bengal Tiger. The forest needs protection as there are about 4 million people living within 10 km of its northern boundary, and they would plunder its resources if these were not under the care of one of the world's most beautiful, but most savage, Big Cats.

A quick look using Google Earth¹ shows clearly the extent of the Sundarbans forest and the stark boundary between the forest and the farmed, inhabited land. Workers in the forest retire to boats at night.



The forest management project had some estimates of growth rates to start with, and *The Consultant* remeasured some plots to see how good these estimates were. They were not good but they were as good as could be obtained. And, importantly, they seemed to be unbiased.

Aerial photography had shown that the area of forest had been constant for many years. The calculation of the annual allowable cut had historically been based on multiplying the average increment for a forest class by the area of that class, and then summing the results. It was classically simple "back of a matchbox stuff" and could have come from Kelly McGrath 101.

The FAO *Chief Technical Adviser* had concluded that the Sundarbans were being overcut, possibly by as much as 10%, but he didn't know how or why. It was impossible to check actual logged yields with predicted yields. The boats carrying the wood to the factories were allowed to use short logs to facilitate stacking and as bolsters. This wood was not measured or recorded as part of the yield.

There came a day when *The Consultant* was cruising along the Sipsah river, with *The Chief Technical Adviser* and *The French Ecologist*. They were idly sitting on the deck of the Bano Kannya, an attractive vessel about 30 m long with a draught of about 2 m. It was a pleasant way to view the forest, especially across a tumbler of Johnny Walker Red Label, and a supply of freshly caught prawns and Hilsa². It was a time to ponder the meaning of life as well as



¹ <http://www.google.com/earth/index.html>

² Hilsa is a fish that is rather bony but tastes delightful.

that of the Sundarbans. They looked at the passing scene, the ever-changing forest, the animal and bird life, the meandering river channels, the areas of erosion, and the areas of accretion where the Keora was colonising the newly created mudflats. And then, suddenly, the penny dropped.

The area of forest was not changing each year but the areas by forest class certainly were. Each year a proportion of forest at all ages and stages of maturity, was eroded. And each year this was being replaced by newly accreted land which was soon covered by young Keora forest. A simple rough calculation was made on the back of a convenient envelope. It indicated that the forest area was changing by 1-2% per year and it was obvious that accounting for this would reduce the allowable cut significantly. The earlier calculations had been correct mathematically, they had just lacked some essential information. They had made an unwarranted assumption.

Back in the office some more expert estimates of the rate of erosion 'refined' the crude estimate of the adjustment needed to the calculation of the annual allowable cut. It roughly matched the guesstimate of *The Chief Technical Adviser*. It is almost regrettable to record that he was a tourism expert with very limited forestry knowledge!

Lesson: There is no one set of approaches appropriate for the management of all forest types and first principles need to be considered in forest planning.

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