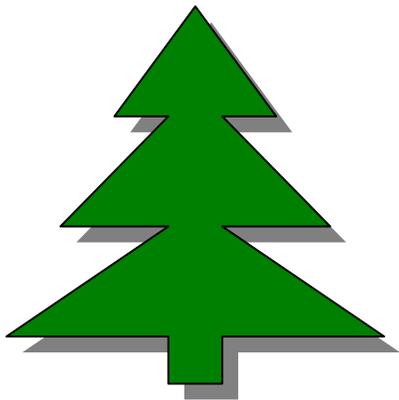


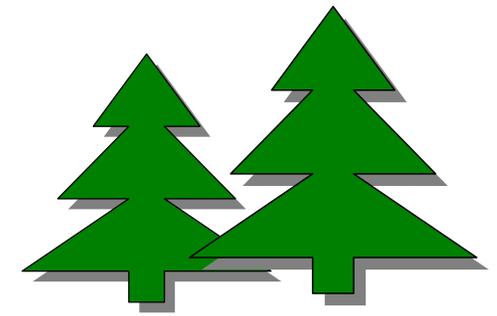


DEFORESTATION LEADS TO GRASSLANDS WITH  
LARGER BIOMASS GENERATION PER YEAR,  
WHICH SUPPORTS CHAIN REACTION OF  
POPULATION INCREASE



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## 1. INTRODUCTION

- Darwin's theory speaks of large numbers of offspring.  
Inherent that there should be evolution towards maximization of biomass generation per year.
- In the quest for sunlight, plants (trees) tend to overshadow each other, maximizing the energy and resources needed for taking nutrition to tree-tops.
- Paradoxically, trees accumulate lots of biomass, but evolve to minimize biomass generation per year because of energy and resources in raising water and nutrients up to the tree tops.
- Grasslands have much larger biomass generation per year than forests.
- An evolutionary niche is therefore created for animals which destroy trees and forests, as this leads to increase in biomass generation per year.
- This evolutionary niche may be occupied by herbivorous animals like elephants, giraffes, etc. Tree destroying animals include beavers, etc.
- Humans may have taken the evolutionary role of cutting branches and trees, promoting the growth of high-biomass yielding grasslands.

- In the history of Man, there has been an increase in numbers and intelligence for thousands of years.

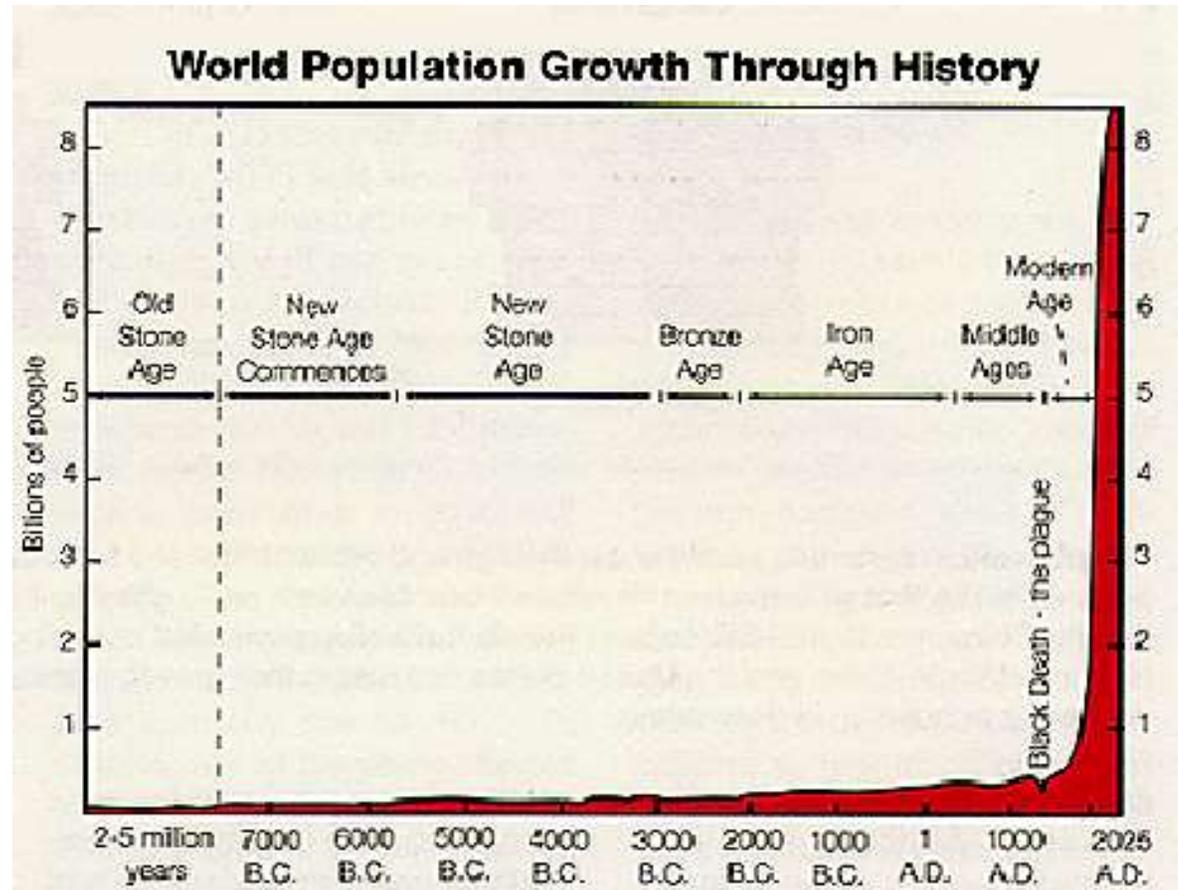
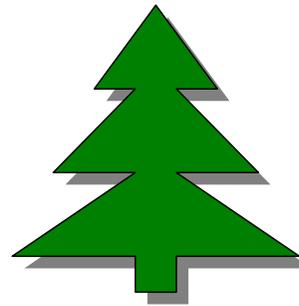


Figure 1. Growth of Human population. [From World Population: Toward the Next Century, © 1994 by the Population Reference Bureau, 1875 Connecticut Avenue, N.W., Suite 520, Washington, DC, 20009. Property of Population Reference Bureau, Inc. (PRB).

**Comparison of trees with grass**



|   | <b>Trees and Forests</b>   | <b>Grasses and Grasslands</b>          |
|---|----------------------------|--|
| Accumulated Biomass                               | Very large                 | Very small                             |
| Rate of biomass production                        | Low                        | High                                   |
| Accessibility of leaves and blades to herbivores  | Low                        | High                                   |
| Internal protection of leaves against being eaten | High                       | Low                                    |
| How they thrive                                   | Reaching higher above them | Thrives when trees are cut by animals. |

## Evolution of Trees and Grasses

- Leaves have high value to trees, which may have made the leaves bad tasting to animals.
- Instead, trees may have made their fruit palatable and tasty to animals, so as to spread their seeds.
- But biomass of high altitude fruit is small, and only a small number of animals can be sustained.
- Grass blades are easy to generate close to ground. Grasses may have little interest in making their blades unpalatable.
- So grasses tend to have uninteresting seeds which are spread from being eaten by grazing animals.

### 3. LOSS OF FORESTATION

- It is generally acknowledged that much of the old-growth forests over the world have been cut down in the last few centuries.
- Did large scale destruction of forests by Man start with the beginning of farming supposedly 10,000 years ago, or much earlier? Like hundreds of thousands of years ago? Or even millions of years ago?
- Could the destruction of trees have taken a dramatic turn when Man became capable of controlling fire?
- What could have caused the disappearance of forests starting millions of years ago? Many explanations offered elsewhere.
- Only explanation is early Man
- River Deltas like Ganges may have started from Deforestation by early Man

## Protected Trees

- Weather mostly permits the growth of trees and forests. Today, trees and forests will grow rapidly if they are not cut down by humans.
- From about 1990 to today (27 years), *Chondrима Uddan* in Dhaka, Bangladesh grew without artificial irrigation and without being cut by humans, to have close to 100 foot high trees (figure below).



## **Mass Extinctions from Habitat loss**

- We know that large-scale extinctions have been going on for thousands of years since the Ice Age. Can these extinctions thousands of years ago be attributed to ancient Man?
- The passenger pigeon went extinct by about 1914, the Western Black Rhino by about 2002, Aurochs by about 1627, and the dodo died by about 1700.
- Habitat loss from loss of forests appears to be the likely cause for these mass extinctions. A large number of tree-dwelling animals must have been unable to adapt to the loss of forests caused by deforestation by ground-dwelling apes.
- Extinctions in the last few centuries are mostly attributed to Man, both due to habitat-loss and hunting.
- Man is responsible for the deforestations and mass extinctions in about the last few hundred years, but how far back in time can he be held responsible?

### MEANS FOR CUTTING TREES

- Stone tools may be used to cut thicker or harder trees and branches. An axe made of sharpened stone tied to a wooden branch would have greatly increased its effectiveness in chopping trees.

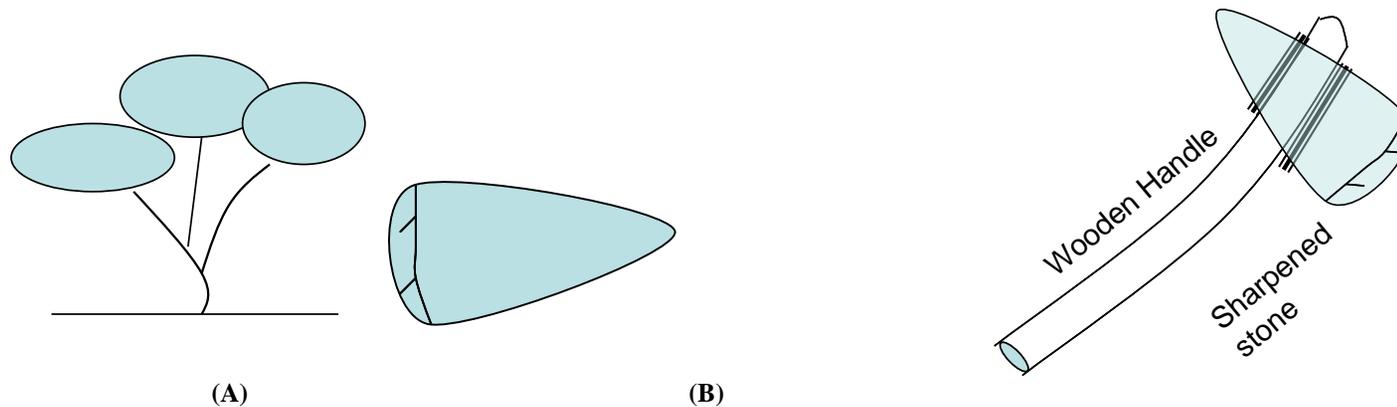


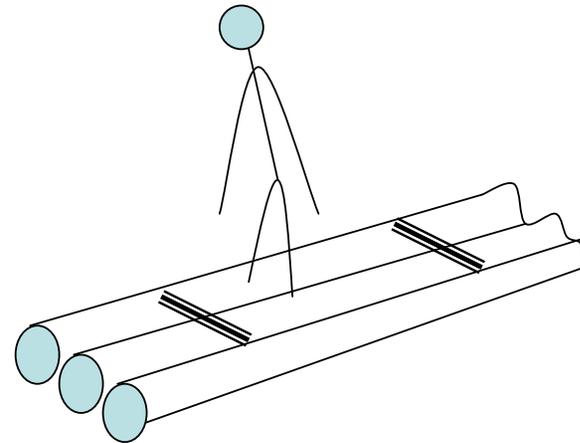
Figure 2. (A) The sharpened or splintered stone could have been effective in cutting down a small tree. (B) Attaching a wood to a sharpened stone to make an axe greatly increases its effectiveness for cutting trees.



**Figure . An ancient stone tool found at a lakeshore in California by the author and his nephew in about 2015. A shaving razor is placed for comparison.**

## USES FOR CUT BRANCHES AND TREES

- We look into human motivation, or how branches may have been used to make nests, spears, clubs, shelters, rafts, fire, etc.
- Modern gorillas, chimpanzees and Orang utans are known to use branches to make nests.
- Tying logs together would have made a raft. Additional branches could be used for making oars or sails.



## FIRE

- Striking stones together would give sparks that ignited dry grass.
- Fire for warmth, cooked food, light at night, keep wild animals away, would have had a major evolutionary advantage.
- Fires require much trees and branches to sustain. The discovery of fire may have led to a sharp increase in the consumption of wood, and the starting of forest fires.
- The discovery of fire may have been the single greatest factor behind the conversion of forests to grasslands, mass extinctions for millions of years.
- *Cooking* - The natural defense of plants and animals against being eaten is to make themselves unpalatable and bad-tasting. Primitive humans may have gotten over this inbuilt protection by cooking animals and plants before eating them. Modern apes often prefer cooked food.
- Light for Extending Productive Hours



## CHAIN REACTION

- The grasslands would increase biomass generation and grazing animals, which would have increased grain and meat in human diets.
- More grains and meat in their diet would promote the intelligence and numbers of humans, which would have led to more tree-cutting, intentional and accidental fires, and replacement of forests with grasslands. All the factors we associate with progress of Man.
- The clear-cutting of forests for crops today and the rapidly increasing human population supports that this chain reaction is continuing to this day.

## CONCLUSION

- An evolutionary niche is created for animals which consume forests, replacing it with grasslands
- Smarter and larger numbers of humans likely destroyed more forests, which created more biomass, and generated smarter and larger numbers of humans a chain reaction resulting in rapid growth in intelligence and population.
- This paper analyzes the prevailing wisdom and literature and suggests that man-made deforestation started not only ten thousand years ago (when Man became a farmer) but much earlier than that.
- Humans have started a chain reaction of reducing forests, increasing biomass generation by grasses, increasing numbers and intelligence of people, and the evolution of Man (that continues to this day).
- The grasslands today (which were the forests of yesterday) are likely the biggest manifestations of the trigger and chain reaction of population boom over thousands of years

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