



It does appear that growing stock (fuelwood and timber) is extracted much beyond (over 10 times) its regeneration capacity. The present findings are supported by previous studies (Anon 2002 & 2003), which reported a forest cover loss of 44400 ha between 1989 and 2001 (i.e. to the tune of 3700 ha/annum) in Kohima district of Nagaland (one of sampling areas). These results demonstrate the pressures on the forests of Northeast India, where these resources are treated as essential for the support of normal household function and therefore are largely under direct management and the conservation of forest fringe communities. The already documented findings that forest patches subjected to excessive plant biomass removal undergo for significant changes in vegetation structure and composition (Lal et al. 1995; Bahuguna & Hilaluddin 1995; Hilaluddin 2005). The adverse impacts of changes in vegetation structure and composition have been very well documented on avian communities in many forest ecosystems across the world (Thiollay 1999; Raman & Sukumar 2002; Skowno & Bond 2003; Kumar & Shahabuddin 2006). Whether over-harvesting of plant biomass from the forests in this landscape of the world, is affecting animal communities, remained unstudied. This requires immediate investigation.

The economic theory, "Bionomic Equilibrium", which assumes that individuals are unregulated and that they attempt to maximize individual profitability, suggests that the abundance of a resource will be depleted to a point where it is not profitable for anyone to expand the harvesting effort. Whether the stock is biologically over-exploited at the bionomic equilibrium depends upon the demand of the product and cost of harvesting. If price is higher or costs low, or the catch rates do not decline as rapidly as the abundance of species, the normal outcome is over-exploitation (Gordon 1954). In the extreme, when the animals are easy to capture and their reproductive rate is comparatively low (as with most of large bodied animals), the bionomic equilibrium may result in the extinction of resource (Clark 1973).

Theory of economic equilibrium is now widely accepted not only in fisheries, but also in all open access resource use including wildlife, forestry and water rights (Hilborn *et al.* 1995). However, societies recognized the need to regulate resources to prevent over-exploitation rates, including property rights and closed areas and time invoked by tribal customs (Sankaran *et al.* 2000; Aderson 2001). Communities of Northeast too have long engaged in self-regulation by a combination of social arrangements and territoriality specifically with regards to plant biomass. However, regulation of animal biomass from the forests does not seem to be limited by such regulations (Hilaluddin *et al.* 2005a, 2005b & 2006; Hilaluddin 2005).

The analysis on occupation status vis-à-vis forest-based biomass extractions as part of the present study suggests that all sections of the society: be they government employees or farmers or businessmen, remove forest-based biomass equally. Such uncontrolled removals of forest biomass are mostly for diversifications of diets, commercial benefits and cultural reasons rather than solely on a subsistence scale.

## References

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