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DIBRU COLLEGE
DIBRUGARH

# খোজ
# Khoj

(বৌদ্ধিক উত্তৰণৰ নিষ্ঠাৱান প্ৰচেষ্টা)

## সামগ্ৰিক পৰিৱেশ বিশেষ
(ষষ্ঠ সংখ্যা)

প্ৰতিষ্ঠা দিৱস
ডিব্ৰু মহাবিদ্যালয়, ডিব্ৰুগড়
১৬ আগষ্ট, ২০১৪

229

সম্পাদকদ্বয়
মধুমিতা গোস্বামী বৰঠাকুৰ
জয়ন্ত সাউদ

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## উৎসৰ্গা

২০১৩ চনত
উত্তৰাখণ্ডত হোৱা
প্ৰাকৃতিক দুৰ্যোগত যিসকল
লোকে মৃত্যুবৰণ কৰিলে সেইসকলৰ
পবিত্ৰ স্মৃতিত খোজৰ এই ষষ্ঠ
সংখ্যাটি উৎসৰ্গা
কৰা হ'ল।

Prof. A.K. Buragohain, Ph.D. (London), DIC
*Vice-Chancellor*

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## শুভেচ্ছা বাণী

প্ৰতি

মধুমিতা গোস্বামী বৰঠাকুৰ,
জয়ন্ত সাউদ
সম্পাদকদ্বয়, 'খোজ'
ডিব্ৰু মহাবিদ্যালয়
ডিব্ৰুগড়

প্ৰিয় গোস্বামী বৰঠাকুৰ আৰু সাউদ,

ডিব্ৰু মহাবিদ্যালয়ৰ শিক্ষক গোটৰদ্বাৰা প্ৰকাশিত বাৰ্ষিক মুখপত্ৰ 'খোজ'ৰ ২০১৪-২০১৫ বৰ্ষৰ সংখ্যাটি মহাবিদ্যালয়ৰ প্ৰতিষ্ঠা দিৱসৰ দিনা উন্মোচন কৰিবলৈ লোৱা বুলি জানিব পাৰি আনন্দিত হৈছোঁ।

আশা কৰিছো উক্ত মুখপত্ৰখনিত শিক্ষক-শিক্ষয়িত্ৰী সকলৰ সৃষ্টিমূলক লিখনিৰ লগতে শিক্ষা সম্পৰ্কীয় বিভিন্ন বিষয়, শিক্ষাৰ লগত জড়িত বিভিন্ন সমস্যা আৰু ইয়াৰ সমাধানৰ উপায় সমূহৰ সন্দৰ্ভতো চিন্তামূলক লিখনি প্ৰকাশ পাব।

মুখপত্ৰখনি সৰ্বাংগ সুন্দৰ ৰূপত প্ৰকাশ পাওক, এই কামনাৰে ———

অলক কুমাৰ বুঢ়াগোঁহাই

অলক কুমাৰ বুঢ়াগোঁহাই

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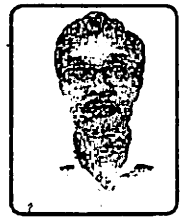

## শুভেচ্ছাবাণী

উজনি অসমৰ প্ৰেক্ষাপটত ডিব্ৰুগড় চহৰ বৌদ্ধিক স্নায়ুকেন্দ্ৰস্বৰূপ। অসমৰ প্ৰথমখন চিকিৎসা মহাবিদ্যালয়, ডিব্ৰুগড় বিশ্ববিদ্যালয় আদিৰ স্থাপনে ডিব্ৰুগড়ক সুকীয়া বিদ্যায়তনিক মাত্ৰা প্ৰদান কৰি আহিছে। এই ডিব্ৰুগড় চহৰৰ মাজমজিয়াত অৱস্থিত ডিব্ৰু মহাবিদ্যালয় চহৰখনৰ ভিতৰতে কলা, বাণিজ্য আৰু বিজ্ঞান — এই তিনিওটা শৈক্ষিক শাখা থকা উচ্চশিক্ষাৰ একমাত্ৰ শিক্ষানুষ্ঠান।১৯৬৩ চনৰ ১৬ আগষ্টৰ দিনা প্ৰতিষ্ঠা লাভ কৰা মহাবিদ্যালয়খনিয়ে ইতিমধ্যে সোণালী জয়ন্তী বৰ্ষ উদ্‌যাপন কৰাৰ সোণালী গৌৰৱ অৰ্জন কৰিছে।

কোনো স্থায়ী দাতা নথকা মহাবিদ্যালয়খনি প্ৰতিষ্ঠাৰ বেলিকা গুৰি ধৰোঁতাসকলে কেনে কষ্ট কৰিবলগীয়া হৈছিল তাক দোহৰাৰ প্ৰয়োজন নাই। সেয়ে প্ৰতিষ্ঠাৰ দিনটো অধিক ৰমণীয় আৰু স্মৰণীয় কৰি তুলিবলৈ সৰ্বতোপ্ৰকাৰে প্ৰয়াস কৰি অহা হৈছে। ইয়াৰে অংশস্বৰূপে 'খোজ' নামেৰে ISSN নম্বৰ সহকাৰে এখনি গৱেষণা পত্ৰিকা প্ৰতি বছৰে প্ৰকাশ কৰি অহা হৈছে। প্ৰধানকৈ গৱেষণামূলক আৰু মৌলিক চিন্তাধাৰাৰ লেখা প্ৰকাশ কৰা গৱেষণা পত্ৰিকাখনিয়ে অধ্যাপক-অধ্যাপিকাসকলৰ চিন্তাধাৰাক পাঠকৰ মাজলৈ কঢ়িয়াই নিবলৈ সক্ষম হৈছে। তদুপৰি লেখক-লেখিকাৰ বাবে এখনি শক্তিশালী মঞ্চ তৈয়াৰ কৰাতো গৱেষণা পত্ৰিকাখনিয়ে এক অনবদ্য ভূমিকা পালন কৰিবলৈ সমৰ্থ হৈছে।

চলিত বৰ্ষৰ সংখ্যাটিৰ কেন্দ্ৰীয় বিষয়টি হৈছে 'পৰিৱেশ'। সাম্প্ৰতিক সময়ত অতিশয় চিন্তনীয় বিষয় হৈ পৰা 'পৰিৱেশ চিন্তা'ক অগ্ৰাধিকাৰ দি পৰিৱেশ সম্পৰ্কীয় বাচকবনীয়া কিছুমান বিষয় পত্ৰিকাখনিত সামৰিবলৈ প্ৰয়াস কৰা হৈছে। পত্ৰিকাৰ যুটীয়া সম্পাদকৰ দায়িত্ব বহন কৰা চিন্তাশীল লেখিকা মধুমিতা গোস্বামী বৰঠাকুৰ আৰু জয়ন্ত সাউদৰ শলাগ ল'লো। ইয়াৰ উপৰি সম্পাদনা সমিতিৰ সমূহ বিষয়ববীয়ালৈ আন্তৰিক শুভেচ্ছা আৰু ধন্যবাদ জ্ঞাপন কৰিছোঁ। আশাকৰোঁ পত্ৰিকাখনিত আলোচিত হোৱা বিষয়সমূহে ন ন চিন্তাৰ বাট মুকলি কৰিব আৰু পৰিৱেশ চিন্তাৰ জগতখনতো বিশেষ অৰিহণা যোগাব।

তাৰিখ ঃ ০৫.০৮.২০১৪

**ড° পৰেশ বৰুৱা**
অধ্যক্ষ, ডিব্ৰু মহাবিদ্যালয়, ডিব্ৰুগড়।

*সম্পাদকৰ কলমৰ পৰা...*

## শৈক্ষিক পৰিৱেশ আৰু শিক্ষক

সুভাষ চন্দ্ৰ বসুৱে কৈছিল, "শিক্ষকসকল এডাল মমবাতিৰ দৰে, যি নিজে গলি আনক পোহৰ দিয়ে।" এজন শিক্ষকৰ ভূমিকা হ'ল জ্ঞানকৰ্মীৰ ভূমিকা। তেওঁৰ দায়িত্ব হ'ল ছাত্ৰ-ছাত্ৰীক জ্ঞান অন্বেষণৰ বাবে উদ্বুদ্ধ কৰা আৰু তাৰ বাবে প্ৰয়োজনীয় পথ দেখুওৱা। এই জ্ঞান কৰ্মীৰ ভূমিকা পালন কৰিবলৈ যাওঁতে শিক্ষকজন কিন্তু বুদ্ধিদীপ্ততাৰে চিৰতৰুণ হৈ থাকিব লাগিব। তেওঁৰ জ্ঞানপিপাসু মনৰ উমান পালেহে ছাত্ৰ-ছাত্ৰী তেওঁৰ দ্বাৰা অনুপ্ৰাণিত হ'ব। শ্ৰেণীকোঠাত শিক্ষকজনে এটা সুন্দৰ শৈক্ষিক পৰিৱেশ তৈয়াৰ কৰি ল'ব পাৰিব লাগিব। তেওঁৰ শিক্ষণ শৈলীৰে ছাত্ৰ-ছাত্ৰীসকলৰ মনত ৰেখাপাত কৰিব পাৰিলেহে ছাত্ৰ-ছাত্ৰী তেওঁৰ শ্ৰেণীটোৰ প্ৰতি আকৰ্ষিত হ'ব। প্ৰতিজন ছাত্ৰ-ছাত্ৰীৰ মানসিকতাৰ উমান ল'ব পাৰিলেহে তেওঁৰ শিক্ষণ কাৰ্যই সফলতা লাভ কৰিব। প্ৰকৃততে গুৰু-শিষ্যৰ উপযুক্ত সম্বন্ধ স্থাপনৰ ওপৰতেই শিক্ষাদানৰ কাৰ্যকাৰিতা নিৰ্ভৰ কৰে। ছাত্ৰ আৰু শিক্ষকৰ সম্বন্ধ বন্ধুৰ সম্বন্ধ হ'ব পাৰে। ছাত্ৰই শিক্ষকৰ ওচৰত তেওঁৰ সকলো সমস্যা নিঃসংকোচে ব্যক্ত কৰিব পৰা হ'ব লাগিব। এনে পৰিৱেশ দিব পৰাকৈ শিক্ষকজনো সৰল আৰু নিষ্ঠাবান হ'ব লাগিব। এয়ে আধুনিক শিক্ষা ব্যৱস্থাৰো ধাৰণা।

বৈদিক যুগৰ শিক্ষা ব্যৱস্থাইও গুৰু-শিষ্যৰ পাৰস্পৰিক নিবিড় সম্বন্ধ আৰু বুজাবুজিয়েহে যে শিক্ষাৰ সাফল্য আনে সেই কথা উনুকিয়াই থৈ গৈছে। তৈত্তিৰীয় উপনিষদৰ গুৰু আৰু শিষ্যই একেলগে কৰা এক উপনিষদীয় প্ৰাৰ্থনাই সেই মহান ভাৱধাৰাৰে স্বাক্ষৰ বহন কৰে।

সহ নাৱবতু সহ নৌ ভুনক্তু
সহ বীৰ্যং কৰৱাবহৈ।
তেজস্বী নাৱধীতমস্তু
মা বিদ্বিষাৱহৈ।।

(পৰমাত্মা ভগৱানে আমাক গুৰু-শিষ্য উভয়কে সমানে ৰক্ষা কৰক; আমাৰ

উভয়ৰে যথোচিত পালন-পোষণ কৰক, আমি দুয়ো যেন একে সমানভাৱে পাৰমাৰ্থিক বিদ্যা লাভৰ সামৰ্থ্য অৰ্জন কৰিব পাৰোঁ, আমাৰ দুয়োৰে মাজত যেন কোনো বিদ্বেষ, পাৰস্পৰিক ঈৰ্ষা, হিংসা নহয়।)

শিক্ষকতাই হৈছে এটা মাত্ৰ বৃত্তি যাৰ দ্বাৰা জ্ঞানৰ শেষ বিন্দুলৈকে আকণ্ঠ পান কৰিব পাৰি। পুৰণি কালত আমাৰ দেশত কেৱল মাত্ৰ শিক্ষকসকলেই সমাজৰ একমাত্ৰ জ্ঞানী লোক আছিল আৰু সেয়েহে শিক্ষকতাৰ বাহিৰেও তেওঁ সমগ্ৰ জাতিটোৰ বাবেই এজন বন্ধু, দাৰ্শনিক আৰু পথ-প্ৰদৰ্শক স্বৰূপ আছিল। সাম্প্ৰতিক সময়ত পৰিস্থিতি সম্পূৰ্ণ সলনি হৈছে। বৰ্তমান সময়ৰ ছাত্ৰ-ছাত্ৰীসকলে জ্ঞান আৰু প্ৰয়োজনীয় খবৰ আহৰণ কৰিব পৰাকৈ বিভিন্ন উৎস আছে। এনে অৱস্থাৰ পৰিপ্ৰেক্ষিতত এজন শিক্ষকৰ ভূমিকাৰ ক্ষেত্ৰতো আমূল পৰিৱৰ্তন সাধিত হৈছে। ইয়াৰে এটা লেখত ল'বলগীয়া পৰিৱৰ্তন হ'ল তেওঁৰ শৈক্ষিক ব্যৱহাৰ, সামান্যভাৱে জ্ঞানৰ সম্ভেদ দিওঁতা এজন ব্যক্তিতকৈ তেওঁক মাথোন জ্ঞানপুষ্ট এটা আহিলা হিচাপেহে বিবেচনা কৰা হয়। মুঠৰ ওপৰত ছাত্ৰসকলে তেওঁলোকৰ জ্ঞান নিজে আহৰণ কৰিব, শিক্ষকজন কেৱল মাত্ৰ পথ প্ৰদৰ্শকহে।

শৈক্ষিক পৰিৱেশৰ এনে এক আমুল পৰিৱৰ্তনৰ সময়ত শিক্ষকজনেও নিজকে প্ৰয়োজনীয় পৰিৱৰ্তনেৰে প্ৰস্তুত কৰি তুলিব লাগিব। বৌদ্ধিক চিন্তা-চৰ্চাৰ পৰা আঁতৰত থকা শিক্ষকজনৰ ছাত্ৰ-ছাত্ৰীক জ্ঞান অন্বেষণৰ উপদেশ দিয়াৰ নৈতিক অধিকাৰ কেতিয়াও থাকিব নোৱাৰে।

পৰিৱৰ্তনশীল সমাজ জীৱনত শিক্ষা আদান-প্ৰদানৰ ব্যৱস্থাটোৰ যদিও সঘনাই পৰিৱৰ্তন হয়, তথাপি যুগ যুগ ধৰি চলি অহা শিক্ষকৰ সাৰ্বজনীন গুণসমূহ আৰু শিক্ষাৰ প্ৰৱহমান ধাৰাটোৰ ধাৰাবাহিকতা কেতিয়াও অন্ত নপৰে। গতিকে এই পৰিৱৰ্তনৰ ধামখুমীয়াত পৱিত্ৰ শিক্ষাবৃত্তিৰে জড়িত আমি শিক্ষকসকলে শিক্ষক দিৱসৰ প্ৰাক্‌ক্ষণত সংকল্পবদ্ধ হওঁ আহক আমি যেন আমাৰ শৈক্ষিক পৰিৱেশ বিনষ্ট হ'বলৈ নিদি জ্ঞানোদ্দীপক চিন্তা-চৰ্চাৰে আমাৰ ব্যক্তিত্বক সৱল কৰি তোলো; আমাৰ ব্যক্তিত্ব যেন দহজনৰ অনুপ্ৰেৰণাৰ যোগ্য হয় তাৰবাবে অহোপুৰুষাৰ্থ কৰোঁহঁক। আমি যেন এটা সুস্থ শৈক্ষিক পৰিৱেশৰ অংশীদাৰ হওঁহঁক।

**শলাগ জ্ঞাপন ঃ** ডিব্ৰু মহাবিদ্যালয়ৰ শিক্ষক গোটৰ বাৰ্ষিক মুখপত্ৰ 'খোজ'ৰ এই সংখ্যাটি সম্পাদনৰ ভাৰ আমাক দুয়োকে দিয়া বাবে কলেজ শিক্ষক গোটৰ সদস্যসকললৈ আমাৰ আন্তৰিক ধন্যবাদ জনালোঁ। অৱশ্যে এই কাম কিমান সুচাৰুৰূপে পালন কৰিব পাৰিলোঁ তাৰ বিচাৰৰ ভাৰ পাঠকসকললৈ এৰিলোঁ।



এই সংখ্যাটি 'সামগ্ৰিক পৰিৱেশ সংখ্যা' হিচাবে উলিয়াবলৈ সিদ্ধান্ত গ্ৰহণ কৰি আমি সহকৰ্মীসকলৰ পৰা লেখা আহ্বান কৰিছিলোঁ। কলা, বাণিজ্য আৰু বিজ্ঞান বিভিন্ন শিতানত পৰিৱেশ সম্পৰ্কীয় সকলোবিলাক লেখাৰ মান্যতা বিচাৰ কৰি তাৰ ওপৰত পাতনি লেখিব পৰা বুদ্ধিমত্তা আমাৰ নাই। গতিকে এই দুৰূহ কাৰ্যৰ পৰা বিৰত থাকি কেৱল মাত্ৰ সংগ্ৰাহকৰ দায়িত্বহে পালন কৰিলোঁ।

গৱেষণাপত্ৰখন প্ৰকাশৰ ক্ষেত্ৰত মহাবিদ্যালয়ৰ মাননীয় অধ্যক্ষ ড° পৰেশ বৰুৱাদেৱৰ ইতিবাচক চিন্তাধাৰাই আমাক আমাৰ কামত আগবাঢ়ি যোৱাত বিশেষভাৱে সহায় কৰিলে। মহাবিদ্যালয়ৰ IQACৰ সমন্বয়ৰক্ষী ভাতৃপ্ৰতীম প্ৰণৱ পালে আৰ্থিক দিশটো মুকলি কৰি নিদিয়া হ'লে এই কাৰ্য সম্ভৱ নহ'লহেঁতেন। সহকৰ্মী বীৰেন বৰুৱা, ড° কমলেন্দু শইকীয়াই বিভিন্ন দিশত দিহা-পৰামৰ্শেৰে আমাক উৎসাহিত কৰিলে। তেখেতসকললৈ আন্তৰিক ধন্যবাদ জনালোঁ। বিশেষভাবে প্ৰাণী বিজ্ঞান বিভাগৰ সহযোগী অধ্যাপক চন্দ্ৰ গুপ্ত বৰাদেৱে প্ৰেছৰ কামখিনি আগবঢ়াওঁতে প্ৰত্যক্ষভাবে যিখিনি সহায় আগবঢ়ালে তাৰ বাবে আমি তেখেতৰ ওচৰত চিৰকৃতজ্ঞ। গৱেষণা পত্ৰখন সম্পাদনাৰ ক্ষেত্ৰত বিভিন্ন ধৰণে সহায়-সহযোগিতা আগবঢ়োৱা, বিভিন্ন দিহা-পৰামৰ্শেৰে আমাক উৎসাহিত কৰা সম্পাদনা সমিতিৰ প্ৰতিজন সদস্যলৈ আমাৰ আন্তৰিক ধন্যবাদ জনালোঁ। আমাৰ অনুৰোধ ৰক্ষা কৰি যিসকল অধ্যাপক-অধ্যাপিকাই পৰিৱেশ বিষয়ক নানা চিন্তাশীল লেখা প্ৰদান কৰিলে তেখেতসকললৈ আমাৰ আন্তৰিক ধন্যবাদ জনালোঁ। ডিব্ৰুগড় বিশ্ববিদ্যালয়ৰ মাননীয় উপাচাৰ্য মহোদয় ড° অলক বুঢ়াগোহাঞিদেৱে আমাৰ অনুৰোধ ৰক্ষা কৰি অনেক ব্যস্ততাৰ মাজতো এটা শুভেচ্ছা বাণীৰে আমাক উৎসাহিত কৰা বাবে তেখেতৰ ওচৰত আমি চিৰকৃতজ্ঞ। আকৌ ডিব্ৰুগড় বিশ্ববিদ্যালয়ৰ প্ৰায়োগিক ভূতত্ত্ব বিভাগৰ অৱসৰপ্ৰাপ্ত অধ্যাপক ড° যোগেন্দ্ৰ নাথ শৰ্মাদেৱে তেখেতৰ বহুমূলীয়া এটা লেখা দি আমাৰ গৱেষণা পত্ৰখন সমৃদ্ধ কৰি তুলিলে। তাৰবাবে তেখেতলৈ আন্তৰিক ধন্যবাদ জনালোঁ। সদৌ শেষত যথাসময়ত গৱেষণাপত্ৰখন প্ৰকাশ কৰি উলিয়াই দিয়া বাবে কৌস্তুভ প্ৰকাশনৰ স্বত্বাধিকাৰী গায়ত্ৰী বৰুৱা প্ৰমুখ্যে সমূহ কৰ্মকৰ্তালৈ আমাৰ আন্তৰিক ধন্যবাদ জনালোঁ। সদৌ শেষত আন্তৰিক শ্ৰদ্ধাৰে—

মধুমিতা গোস্বামী বৰঠাকুৰ
জয়ন্ত সাউদ
যুটীয়া সম্পাদক 'খোজ'

ডিব্ৰু মহাবিদ্যালয়
১৬ আগষ্ট, ২০১৪

## সূচী / CONTENTS



# FLOOD AND BANK EROSION PROBLEMS OF THE RIVER BRAHMAPUTRA, ASSAM


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## INTRODUCTION AND THE FLOOD PROBLEM :

Floods in the valley of a river are important hydrologic and geomorphic events dominated by two distinctive characteristics: (a) floods represent a significantly high discharge as compared to the mean flow (b) high magnitude flood events are the outcome of random and anomalous synoptic conditions and cannot be predicted with certainty. Flood as defined by the International Commission on Irrigation and Drainage is a relatively high flow or stage in a river markedly higher than usual, also the inundation of low land which may result thereform. From the geomorphic point of view a flood can be describe as high flow for which this stream channel is manifestly inadequate transportation system and whose passage involves atleast the lower part of the valley flat (Gupta, 1988). For meteorological studies Ramaswami (1985) considers a flood as severe if the highest flood level is atleast 2m above the danger level and as catastrophic if the damages caused by it is exceptionally heavy.

India is the second largest flood affected country in the world. Hence the average flood affected area is 96.6 lakh hectares damage to crops in 37.6 lakh hectares (Petel and Purohit, 1986). Analysis of flood data indicates that the intensity of flood is increasing in recent years. The average area effected by floods during 1980s was higher than in any of the previous decades. Since 1986 floods were said to be the "worst in memory." Again the floods occurring in 1987 were called "unprecedented." But the floods in 1988 turned out to be even more devastating.

The Brahmaputra is an International river having a length of 2880km. out of which 1625km. fall in Tibet (China), 918 km in India and the rest in Bangladeh. The total catchment if the river basin extends over an area of 580,000 km$^2$ of which 2,93,000 km$^2$ in Tibet (China), 195,000 km$^2$ in India, 45,000km$^2$ in Bhutan and 47,000km$^2$ in Bangladesh. The river Brahmaputra has been well-known for occurrence of heavy flood during the monsoon season. The floods in the Brahmaputra are due to chiefly seasonally heavy rainfall and partly to melting of snow in the Himalayas. The annual rainfall varies from 100 cm to 400 cm over the basin. But most of the rainfall (60% to 85%) occur in the monsoon month of June to September. This period also happens to be the time of melting of snow in the Himalayas. Reports reveal that there is a positive relationship between the amount of accumulation of snow in the winter and magnitude of flood on the trans-Himalayn rivers in the following summer rainy season.

The north-bank tributaries of the Brahmaputra create more floods than those on its south bank. These tributaries have steeper slopes, shallow and braided channels, and coarse sandy beds. They carry a heavy silt charge and have a tendency to bring flash floods because of the short distance between their source in the hills and their confluence with the Brahmaputra. The south-bank tributaries have comparatively gentler slope, deeper channels from foothills, are clayey and hence have more stable beds and banks. The floods caused by the south bank tributaries are less widespread. The Brahmaputra river, being braided in nature, develops multiple channels. Braided channels are characterised by excessive bed load and lateral migration on the banks, causing both erosion and deposition. So, bank erosion is the next problem of the Brahmaputra river. But unlike flood the bank erosion is dependent upon local factors such as composition and engineering properties (cohesiveness) of the bank materials.

There are many reports of occurrence of heavy flood in the Brahmaputra during the years 1642, 1787, 1795, 1862,1867, 1870, 1886, 1981, 1935, 1962, 1966, 1968, 1969, 1970, 1973, 1988, 1997, 1998. Examination of flood series several years indicate that long tern fluctuations in annual peak discharge/stage are not random. They show some link with the long period. But in applied hydrology large floods are expressed in terms of return period of recurrence interval (100 years, 500 years or 1000 years).



**CAUSE OF FLOODS :**

The main causes of flood can be grouped into three categories.

(i) Meteorological,
(ii) Geomorophic and
(iii) Anthropogenic.

Flood is now regarded as a natural hazard. Flood occurs when the intensity and/or duration of rainfall becomes high. Many floods are generated by rainstorms. The geomorphic causes includes meander growth, channel migration, avulsion and failure of landslides induced darms. Anthropogenic floods are caused by failure of man-made dams and breaching of artificial embankment.

Besides the causes mentioned above the flood damage due to the Brahmaputra has been amplified by two major factors which in true sense should not have been included in estimation of the same. Population explosion has compelled mankind to settle in many lowlying areas adjacent to the river which othewise have been used as flood storages of the river. Examples of such places are in many parts of Mori Gaon and Lakhimpur district of Assam. Therefore, inundations of such areas should not be regarded as flood, Similarly people have been allowed to settle down in several islands (chars) of the Brahmaputra. But the entire area within the two banks of a river is the way for passage of the flood wave (flood corridor) and those islands have been formed by the flood deposits of the river. Therefore, flooding of these inhabitated island is a natural phenomena and should not be regarded as a hazard.

Estimation of flood by physical approach may be difficult for the Brahmaputra. At each location, the better alternative will be statistical flood frequency approach as stated earlier. The maximum water level (stage) at Dibrugarh has been 107.95 m on 29.7.82 and minimum 100.13 m on 18.1.73, while at Pandu the maximum has been 49.76 m on 29.8.88 and minimum 40.19 m on 10.3.98.

So far records are available the maximum discharge of the Brahmaputra has been 72794m$^3$ sec on 23.8.62. The minimum has been 1757 m$^3$/sec on 20.2.68. Taking long term data the Brahmaputra Board has estimated the annual and quraterly yields at Pasighat, Bechamora and Pandu as

185,102,278,446 and 526,091 m³/sec. Using the statistical method of flood frequency study the flood peaks of the river estimated for different return periods at three sites are given below in Table-1.

**Table 1**

Flood peaks im $m^3$/sec at return period of

| | 100 Yr. | 50Yr. | 25 Yr. | 20Yr. | 10Yr. | 5 Yr. |
|---|---|---|---|---|---|---|
| Bechamora | 34980 | 34255 | 33365 | 30500 | 3000 | 28500 |
| Pandu | 72028 | 68964 | 65692 | 64000 | 61000 | 57900 |
| Jogoghopa | 82150 | 79125 | 75685 | 74000 | 69900 | 66000 |

It is evident from the above data that exceptionally high floods have greater return period.

BANK EROSION PROBLEM :

It has been already mentioned that the bank erosion is a characteristics feature of the braided Brahmaputra river. Several areas along the course of river have been suffering from heavy bank erosion. Among these Guijan-Rahmoria-Mothala, entire Majuli, Nimati, Moriahola, Kaziranga, Palasbari, Mokalmua are important. In order to evaluate the short term changes of the river banks of the Brahmaputra maps and satellite imagery have been very helpful. These are complied into similar scale for assessment of the bankline migration. In the present case banklines of the Brahmaputra from the confluence of Lohit and Dihing up to Bessamara for the years 1916, 1965, 1971, and 1983 have been superimposed. In order to study the bankline migration stations have been selected approximately 10-15 km apart and all measurements were made at these station. Three periods 1916-1965, 1969-1971 and 1971-1983 have selected for the study. Data of bank erosion as shown in Table-2 reveal that migration has occurred on both banks for the three periods. The banks suffered erosion as well as deposition. During the period 1916-1965 the maximum rate of erosion was 87.75 m per year at station near Bechagaon and the maximum amount of deposition or build up was 10.2 m per year in station near Rupohimukh. In most of the cases both the banks were retreating rapidly. In some cases one



bank is eroding and the other is building out but at variable rate. In no cases both banks are found to be silted up simultaneously. The situation for the period 1965-1971 was similar but the maximum rate of erosion and deposition have been 433.33 m and 283.33 m per year respectively. There were three constricted sections during 1916 through which the river flowed in one channel but all these turned out to multiple channels. The increase in width in these sections during subsequent period 1971-1983 is found to be little less.

**Table-2**

**Migration of the north and south banklines in metres per year during the-3 periods.**

| | North bank | | | South bank | | |
|---|---|---|---|---|---|---|
| Place | 1916-65 | 1965-71 | 1971-83 | 1916-65 | 1965-71 | 1971-83 |
| Laika | -36.73 | -133.33 | -23.08 | -20.41 | -366.67 | +30.76 |
| Burhi Suti | -61.22 | +233.33 | -92.31 | -14.29 | -41.67 | -7.69 |
| Bechagaon | -14.29 | -50.00 | -7.69 | -87.75 | -25.00 | -11.54 |
| Mothola | -40.82 | +283.3 | + 15.38 | -36.73 | -50.00 | -15.38 |
| Aithan | -40.82 | -25.00 | -19.23 | -22.45 | +16.67 | -7.69 |
| Bogibil | -46.94 | -66.67 | -46.15 | -18.37 | -8.33 | -3.85 |
| Arkaimirigaon | -46.94 | +16.66 | -23.08 | +2.04 | -8.33 | +26.92 |
| Dalphagaon | -4.08 | +133.33 | 53.85 | -12.24 | -33.33 | -38.46 |
| Disangmukh | -6.12 | +16.66 | -57.69 | -40.82 | -16.67 | -11.54 |
| Shikarigaon | -51.02 | -200.00 | +42.31 | -8.16 | -250.00 | +7.69 |
| Rupahimukh | -51.02 | -125.00 | -19.23 | +10.20 | -83.33 | +11.54 |
| Bechamora | -6.12 | +25.00 | -7.69 | -3.06 | -41.66 | +11.54 |

This study points our that the nature of migration of banklines is erratic. The rates give some indications of the magnitude of movements that can occur in a relatively small and long period. The most important findings of this study are as follows:

a. The rate of erosion was much more in the middle period.

b. The river Lohit has diverted its major flow through the river Dangori and Dhola from west of Saikhoaghat to Oakland. As a result of this the second

Majuli island has formed within the Brahmaputra. This island comprise the Dibru-Saikhoa reserve forest with a length of 50 km and width 4 km.

c. The constricted portion on which the bridge site over the Brahmaputra has been proposed has widened by more than two time by now as compared to 1916.

d. The bank erosional rate of Salmor-Dakhinpat area is execeptionally less as compared to the other parts of Majuli which is because of local soil properties.

There are historical evidence that the river flowed about 20 km north of the present channel about 200 years ago. Since the area is located in one of the most active areas of the world, because of possible tilting of the recent sediment surface by any neotecttonic cause resulted in migration of the channel in different directions at different times.

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# BIO-DIVERSITY OF THE NORTH EAST INDIA AND CHALLENGES TO WILDLIFE WITH SPECIAL REFERENCE TO RHINOCEROS


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*Biodiversity is defined as "the intrinsically-inbuilt plus the externally-imposed variability in and among living organisms existing in terrestrial, marine and other ecosystem at a specific period of time". "Biodiversity includes assemblages of plant, animals and micro-organisms, their genetic variability expressed and populations, their habitats, ecosystems and natural areas, the mosaic of which constitutes the landscape which gives the richness to the natural environment" (Denny, 1997). According to Edward Wilson "Biodiversity is the combined diversity at all the levels of biological organization."*

## History of Biodiversity

The term 'diversity' is not new, rather has a long history, but 'biological diversity' came into use in scientific literature only in the 1980s. The term was first coined by Lovejoy who, however, did not provide any formal definition to it, but considered it as only the number of species (Lovejoy, 1980). Rosen in 1985 used the term 'biodiversity' in the first planning conference of the 'National Forum on Biodiversity', Washington D. C., on Sept. 1986. Wilson (1988) edited the proceedings of the conference titled Biodiversity, and this popularized the concept. Convention on Biological Diversity in June 1992, constituted a historical commitment by many nations of the world. For the first time, biodiversity was comprehensively addresses in this global treaty. At the same time the genetic diversity was considered and conservation of biodiversity was accepted as the common concern for the cause of human welfare (Gatson, 1998).

This paper attempts to assess the bio-diversity status of N.E. region of India and possible threats to it. This paper also wants to appraise the reasons of extinction of wildlife with special reference to the fate of rhinos in Assam. This analysis is based basically on secondary source of data and some primary data have also been taken where necessary.

## BIODIVERSITY OF NORTHEAST INDIA

Northeast India is blessed with a wide range of physiographic and eco-climatic conditions. It represents the transition zone between the Indian, Indo-Malayan and Indo-Chinese biogeography regions and a meeting place of the Himalayan Mountains and Peninsular India. The region is one of the richest in biological values. It is in this lowland-highland transition zone that the highest diversity of biomes or ecological communities can be found and species diversities within these communities are also extremely high.

## FLORA

The vegetation of the northeastern region is fairly well known. With about 1, 67,000 sq.km. area under forest, this region accounts for approximately 7500 species of angiosperms. The State of Sikkim alone holds about 5000 species of flowering plants. Out of 315 families of Angiosperms in India, more than 200 are represented in Northeast India and this region accounts for nearly 50% of the total number of plant species in India as a whole. Though the flora of this region exhibits an Indo-Malayan affinity, the floral elements of other parts of India, and of neighbouring and far off countries, have also contributed to its richness and diversity. It is to be noted that about one third of the flora of India is endemic to this region. The NE region accounts for nearly 50% of the total number of plant species in India as a whole. The region has at least 7,500 flowering plants, 700 orchids, 58 bamboos, 64 citrus, 28 conifers, 500 mosses, 700 ferns and 728 lichen species. Some of the important gene pools of citrus, banana and rice have been reported to be originated from this region. Out of the 315 families of Angiosperms in India, more than 200 are represented in NE India.

**The carnivorous/ Pitcher plant (*Nepenthes khasiana*)** is endemic to Meghalaya and is placed in Schedule VI of the wildlife (Protection) Act, 1972.

**Siroy lily (*Lilium mackliniae*)** a ground lily that produces beautiful



flowers, is a narrow endemic found in the eastern border area of Manipur in Ukhurl district.

**Agarwood (*Aquilaria malaccensis*)** that occurs in the tropical forests of the NE regions is highly prized and is listed in Appendix II of CITES Schedule VI of the Wildlife (Protection) Act, 1972.

**The yew tree (*Taxus baccata*)** is a highly toxic plant that has occasionally been used medicinally, mainly in the treatment of chest complaints. Modern research has shown that the plants contain the substance 'taxol' in their shoots. Taxol has shown exciting potential as an anti-cancer drug, particularly in the treatment of ovarian cancers.

*Taxus baccata* found in West Kameng and Tawang district of Arunachal Pradesh are cut down by the local people and exploit for commercial purpose. Due to the large scale destruction, the survival of species is threatened and immediate conservation is needed. Therefore, in Bomdila a nursery of *Taxus* baccata is set up and helping from the verge of extinction.

## Rhododendron

The genus Rhododendron of Ericaceae is another remarkable group of showy plants with nearly 98% of the total Rhododendrons reported from India are confined to Himalayan region. In total 72 species, 20 sub species and 19 varieties listed from India, 71 species, 2 sub species and 5 varieties of Rhododendron endemic to north eastern region, Arunachal Pradesh has maximum number of endemic species with 9 species and 1 sub species, followed by Manipur and Sikkim with 3 species and 1 sub species and Mizoram with 2 species (Mao et al 2001).

## Orchid

Orchidaceae, the most fascinating and highly evolved groups of plants with 1229 species belonging to 184 genera in India (Singh & Chauhan 1999), about 700 species have been reported from north eastern region of India. Of these, 545 species belonging to 122 genera are reported from only Arunachal Pradesh of which 12 species are under endangered category, 16 species vulnerable and 31 species threatened.

## FAUNA

The region is equally rich in faunal diversity. An estimated 3,624 species of insects, 50 molluscs, 236 fishes, 64 amphibians, 137 reptiles, 541 birds and 160 mammalian species have been so far described.

**Primates:** Three families of primates' occur in India with 15 known species, nine of these species occur in North east India • The Golden Langur (*Trachypithecus geei*) is a Schedule I animal and is also listed in the Appendix I of CITES.

The Slow Loris (*Nycticebus bengalensis*) is an inhabitant of tropical forests south of the Brahmaputra River in Northeast India. This is a highly endangered animal.

**Carnivores**

- Of the six largest cats of the world recorded from India, state of Arunachal Pradesh only sustain four of them - the Tiger (*Panthera tigris*), Leopard (*Panthera pardus*), Snow Leopard (*Uncia uncia*) and the Clouded Leopard (*Neofelis nebulosa*).
- Red Panda, protected under Schedule I of the Indian Wildlife (Protection) Act, 1972 and listed as 'Endangered, by IUCN is also predominantly available in the region.

**Ungulates**

The foothill grasslands and broadleaf forest harbor important population of Asian elephant, onehorned rhinoceros and wild water buffalo. **In Northeast India, Great Indian Rhinoceros (*Rhinoceros unicorns*) is now restricted to Kaziranga, Pabitora and Orang in Assam.**

- The Brow-antlered Deer (*Cervus eldi eldi*), locally known as Sangai is endemic to Manipur and one of rarest and the most localized subspecies of deer in the world.
- The Pygmy Hog (*Sus salvanius*) is the smallest and the rarest wild suid in the world, and only a few isolated wild populations survive in Northeast India.

**Birds**

- From Arunachal Pradesh over 760 bird species have been reported (Borang 2004).
- Greater Adjutant (*Leptoptilos dubius*) is a globally threatened bird with the majority of the world's population now found in Assam.
- Spot-billed Pelican (*Pelicanus philippensis*), Blacknecked Stork (*Ephippiorhyncus asiaticus*), Lesser Adjutant (*Leptotilos javanicus*), and Pale-capped Pigeon (*Columba punicea*), are only to name a few of the globally threatened birds found in the region.



- Swamp Francolin (*Francolinus gularis*), found in Northeast India, is endemic to the Indian subcontinent.

**Lower Vertebrates**

- So far 137 species of reptiles have been recorded from Northeast India which has the greatest affinity to the Oriental, Indo – Malayan and Indo – Chinese regions. 20 lizard species from the State of Assam and 18 species from the tiny state of which is profoundly influenced by the Indo-Chinese connection have been recorded so far.
- Of the three species of Monitor Lizards found in the region, *Varanus flavescens* is listed in Schedule I under Wildlife (Protection) Act, 1972.
- The Tokay Gecko (*Gekko gekko*) is the largest gecko alive today and is found in northeast India.
- Fifty eight species of snakes have been recorded in Assam, 34 from Manipur and 92 from Arunachal Pradesh. *Python reticulatus*, the largest snake in India, is found in northeast India and *Python molurus bivittatus* is the most commonly known in the region.

So far 64 species of amphibians have been recorded from the Northeast India.

**Invertebrates**

- The Biodiversity Strategy and Action Plan for Northeast Eco-region suggests that 3,624 species of insects and 50 molluscs are recorded from the region.
- Butterflies and moths are by far the best-studied invertebrate organisms in Northeast India, and the region contributes the maximum number of species for the group in the country.

Humans endanger the existence of species in *three* principal ways. The first is through direct ***exploitation***, such as **hunting**. Second is the ***biological havoc*** that is occasionally wreaked following the introduction of alien species to new ecosystems, whether deliberately or accidentally. The third, and by far the most important, mode of human-driven extinction is the ***destruction and fragmentation of habitat***, especially the inexorable cutting of tropical rainforests.

**Benefits of biodiversity**

- **Economical benefits –**

**a) Food value** – providing food to the human population on this earth for thousands of years. In the process of development of human civilization, man has unfolded many plant and animal life forms which are directly or indirectly helpful for him in solving his food problem. Due to the scientific advancement many new varieties have been discovered which are high yielding.

**b) Commercial value** –timber which is a major component of material used for providing shelter to man. Natural fibers like cotton and silk are still used for clothing by human population.

**c) Medicinal value** –Medicines, drugs and pharmaceuticals. Many plant genetic resources are used from derivation of basic drugs. These plant resources vary from actinomycetes and fungi to large trees.

Traditional knowledge of indigenous people still keeps an edge over the scientific knowledge in this field.

This benefit of biodiversity is still unexplored as the scientists could assess a small fraction of biodiversity for their potential for medicine and agriculture.

■ **Aesthetic value** – Man has always been fascinated by the natural beauty and nature has inspired him resulting in development of his moral and ethical values. This intrinsic value of plants and animals are independent of their economic and commercial value. Wonderful plants and animals of this planet not only reflect their aesthetic value but they can make us think of the creator. This opens doors for spiritually which envisages to live in harmony with the nature.

■ **Ecological benefits/services (Indirect use value)** – Biodiversity supplies the buffering capacity and stability to life on the planet by maintaining the interactive dynamics of the ecosystems of the world.

**THREATS TO BIODIVERSITY** of this region through:

■ Growing human population

■ Specific types of human actions that threatened biodiversity and ecosystems and causes to extinction of many species are:

■Over-hunting/over-exploitation

■ **Habitat loss/ degradation/ fragmentation**

■ Deforestation

■ Invasion of non-native species

■ Pollution

■ Climate change



■ Cultural impacts

**Over-exploitation**: Humans have always depended on nature for food and shelter, but when 'need' turns to 'greed', it leads to over-exploitation of natural resources.

**Habitat loss/ degradation /fragmentation** is an important cause of known extinctions. As deforestation proceeds in tropical forests, this promises to become the cause of mass extinctions caused by human activity. All species have specific food and habitat needs. The more specific the needs and localized the habitat, the greater the vulnerability of species to loss of habitat to agricultural land, livestock, roads and cities. In the future, the only species that survive are likely to be those whose habitats are highly protected, or whose habitat corresponds to the degraded state associated with human activity. Besides total loss, the degradation of many habitats by pollution also threatens the survival of many species. When large habitats are broken up into small fragments due to various human activities, mammals and birds requiring large territories and certain animals with migratory habits are badly affected, leading to population declines..Habitat fragmentation is a further aspect of habitat loss that often goes unrecognized. The forest or other habitat that remains generally is in small, isolated bits rather than in large, intact units. Environmental fluctuations, disease, and other chance factors make such small isolates highly vulnerable to extinction. Any species that requires a large home range, such as a grizzly bear, tiger, etc will not survive if the area is too small. Moreover, small land units (fragments) are strongly affected by their surroundings, in terms of climate, dispersing species, etc. As a consequence, the ecology of a small isolate may differ from that of a similar ecosystem on a larger scale.

**Alien species invasions**: When alien species are introduced unintentionally or deliberately for whatever purpose, some of them turn invasive, and cause decline or extinction of indigenous species. E.g. environmental damage caused and threat posed to our native species by invasive weed species like carrot grass (Parthenium), Lantana and water hyacinth (Eicchornia). The recent illegal introduction of the African catfish Clarias gariepinus for aquaculture purposes is posing a threat to the indigenous catfishes in our rivers.

**Pollution**: Chemical contaminant certainly poses a further threat to species and ecosystems. While not commonly a cause of extinction, it likely can be for species whose range is extremely small, and threatened by contamination.

**Climate changes:** A changing global climate threatens species and ecosystems. The distribution of species (biogeography) is largely determined by climate; as is the distribution of ecosystems and plant vegetation zones (biomes). Climate change may simply shift these distributions but, for a number of reasons, plants and animals may not be able to adjust. The pace of climate change almost certainly will be more rapid than most plants are able to migrate. For these reasons, some species and ecosystems are likely to be eliminated by climate change. Agricultural production likely will show regional variation in gains and losses, depending upon crop and climate. Based on the degree of threats face by the species, **species are categories into different conservation category i.e. Extinct, Endangered, Vulnerable and Risk.** Therefore, it is pertinent to protect and conserve the existing biodiversity for the socio-economic development and ecological balance.

**Ruthless killing of Rhino in Assam:**

Ruthless rhino poaching in Assam is one of the major environmental issues in India, which continues in the region of **Kaziranga** National Park, **Manas** National Park and some other grasslands of Assam. The only one horned rhino of the world is surviving in the north east corner of India, Assam. **Kaziranga** National Park, **Pobitora** in Morigaon district and **Orang** National Park in Darang district of Assam account almost 95% of the total wild one-horned rhino in the world. These rhinos are inhabited most of the food-plain of the Indo-gangetic and Brahmaputra riverine tracts and neighbouring foothills.

In early days, sport hunting became common in the late 1800s and early 1900s. Assam's rhinos were hunted relentlessly and persistently. Reports from the middle of the 19th century claim that some military officers in Assam individually shot more than 200 rhinos.

Poaching for rhino horn became the single most important reason for the decline of the Assam rhino after conservation measures were put in place from the beginning of the 20th century, where legal hunting ended. From 1980 to 1993, about 692 rhinos were killed in India. In Assam's Laokhowa Wild Life Sanctuary, 41 rhinos were killed in 1983, virtually the entire population of the sanctuary. By




the end of 1990, poaching had rendered the species extinct there.

**Methods of poaching:**

**Six methods of poaching have been recorded**, such as –

a) Shooting is by far the most common method used. Rhino horn traders hire sharp shooters and often supply them with sophisticated weapons and ammunitions;

b) Trapping in a pit depends largely on the terrain and availability of grass to cover it. Pits are dug out in such a way that a fallen animal has little chance to maneuver with its head slightly above the pit, so that it is easy to saw off the horn.

c) Electrocuting is used where high voltage power lines pass through or near a protected area, to which poachers hook a long insulated rod connected to a wire, which is suspended above a rhino path.

d) Poisoning by smearing zinc phosphate or pesticides on salt licks frequently used by rhinos.

e) With a noose, this cuts through the rhino's skin and kills it by strangulation.

**Reasons:**

Illegal rhino horn trade has been the main problem facing managers of the rhino protected areas of Assam. Some other parts like nails, skins have very high value in Asian traditional medicine market. According to a research by TRAFFIC (conservative programmme) and World Wide Fund for Nature (WWFN), some Vietnamese buyers believe horn to be a cure for cancer when ground to a fine provider. According to a survey conducted by WWFN in South Africa, it is kept by wealthy people in Vietnam as a peace of mind cure.

In 1993, rhino horn was removed from the official lists of traditional Chinese medicines. It is now only sold in Vietnam following a unsustainable rumour that horn cured cancer of a high ranking official in Vietnam.

**Preventive measures taken by the Government:**

Forest department of Assam took a proposal of dehorning of rhinos to save it from poachers on February, 2014. The Government of Assam also called for public opinion by committee headed by the Principal Conservator of Forest (Wildlife) for taking a decision on it. But many environmentalists and NGOs (like Aranyak, a society for biodiversity conservations) urged to the State Government not to take dehorning of rhinos as a measure to protect them from poachers. The final decision of the committee is not declared till May, 2014.

**Conclusion:**

Biodiversity knows no political boundaries and its conservation is therefore collective responsibilities of all nations. Conservation of biodiversity is essential for the human survival, notably through health, food and industry. Priority should be given first to conserve those species which have vital resources which benefit to mankind at shorter duration and also to conserve threatened, endangered and rare species of the nation. An approach of sustainable harvest or exploitation of the species will be helpful for the conservation of biodiversity, offering all the basic necessities for the subsistence of man's life. Therefore, sustainable use of resources and sustainable development are highly needed in order to save the loss of biodiversity.

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# AWARENESS OF ENVIRONMENTAL EDUCATION FOR THE CONSERVATION AND EQUITABLE USE OF BIO-DIVERSITY OF THE NORTH -EAST REGION

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The North-East's unique natural beauty, different species of wild life, religious places, historical & heritage sites, diverse attractive tribal culture, friendly and hospitable people, could make the region, the Switzerland of the east. The multi-colored seasonal festivals of the major tribes of North-East can also attract cultural tourists from different parts of the world. The North-east region of India, which includes the eight states of Arunachal Pradesh, Nagaland, Manipur, Mizoram, Tripura, Meghalaya and Assam(the seven sisters) and Sikkim(a brother) ,is a treasure for those in search of culture, adventure and wildlife. But due to materialistic philosophy of life and lack of *awareness of human beings, the environmental degradation has threatened the survival of all life forms.*

The word "Environment" is very difficult to define. The normal meaning of Environment relates to surroundings, but obviously that is concept which is relatable to whatever object it is which is surrounded. The term "Environment" is derived from the French word Environ, which means 'to surround'. Therefore, the etymological meaning of environment is' surrounding conditions'. More commonly, everything that affects an organism during its life-time is collectively known as environment. Einstein had once observed, "The Environment is everything that is not me". From time immemorial emphasis has always been laid to main the purity of nature. Environment is a polycentric and multifaceted problem affecting the human existence. Man is nature's best promise and worst enemy. If for the progress of the society industry is necessary, pollution is inevitable. Since progress and pollution go together, there can be no end of progress and consequently, no escape from pollution.

In other words, environment means the surrounding in which man and other living organisms operate and include physical factors such as air, water, land etc., and living organisms like plants, animals and other organisms and their inter-relationship. In short, environment is the sum total of all external conditions and influences that affect living organisms. It consists of all living non-living things which surround us.

Environmental Education is interdisciplinary. It derives shares and applies knowledge, concepts and skills from all disciplines. The life-support processes must be protected. It is the task of educators to ensure that young people are made aware of their responsibility to the life-support processes and their ability to meet this challenge. The concept of Environmental Education is about a century and there has been a sudden increase in the activities related to it, during the past quarter century. So far as environmental awareness in India is concerned, our Vedic rishis were fully aware of it and they performed yagyas to purify the environment.

**Environmental Problems in the North-Eastern Region:**

The environmental degradation in this region is due to a number of factors, among which Jhum cultivation, encroachment of forestland, deforestation, unscientific exploration of coal field etc., are to be specially mentioned. The North-East hill region suffers from the serious problems of deforestation due to Jhum cultivation. Deforestation again causes flood, soil erosion, air pollution and absence of rain. Moreover, the effluents of the Jogighopa Paper Mill and the Kamrup paper Mill are directly drained into the river Brahmaputra. The Digboi refinery has been discharging its effluents to the nearby rivers. Bokajan Cement Factory, Meghalaya Cement Factory and Dimapur Sugar Mill are discharging their effluents in the tributaries of the Brahmaputra and this certainly is polluting the greatest water resources of Assam as well as the North-Easter region.

**Objectives of the paper:**

The specific objectives of the



paper are to provide answers to the following questions:

I. To highlight the importance of environmental education for environment protection.

II. To point out some of the major factors that leads to environmental degradation in the North-Eastern Region.

III. How to provide some suggestions so as to implement the required measures effectively.

**Research Methodology:**

The paper is mainly based on secondary information. Important inputs for the study are collected from the experts, government publications/ records, periodicals, reports, journals, books, newspapers, websites, internet, articles and related plan documents.

**Placing Environmental Education in Curriculum:**

The protection of Environment is a global issue and it is not an isolated problem of any area of nation. The problem or environmental pollution in an increasingly small world concerns all countries irrespective of their size, level of development or ideology.

Recently the Supreme Court of India has ruled that a course of Environment be made compulsory at the undergraduate level. The Supreme Court has directed the University Grants Commission to introduce Environmental Studies at undergraduate level. The U.G.C., accordingly prepared the core module syllabus consisting of seven units: Multidisciplinary nature of Environmental Studies, Natural Resources, Ecosystem, Biodiversity and its Conservation, Environmental Pollution, Social issues and the Environment and Human Population. The syllabus also includes a field work as a supplement wherein students are required to write a project report. The basic purpose of the course is to create environmentally and socially aware and responsible citizens. This syllabus introduces students to key scientific concepts related to environment and sustainable development. It provides a comprehensive understanding of environmental concerns and issues with special reference to the Indian context. The primary objective of the syllabus is to create an awareness of the environment. It conceptualizes the environment as a multidimensional and complex living system and describes the interlinkages that make up this system.

The introduction of Environmental Studies in the undergraduate courses of all universities is a timely gesture aimed at creating environmental awareness among students. This is the age of environment since environmental concerns, both domestic and global, are defining the way of our economy and our everyday life. So, the student fraternity has immense responsibility towards sensitizing people on environmental problem and involving the community to make a safer and purer world. In order to do so, the students at first need to be educated in environmental concerns. However, the education thus provided needs to be updated from time to time, keeping in view the changing scenario of environmental issues affecting the world at large.

Environmental education should aim at making students aware of the value and significance of traditional wisdom and local biodiversity. We know that traditional knowledge has led to the growth of indigenous systems of medicine like ayurveda, unani, siddha etc. There is a growing awareness of the importance of traditional systems of medicine. Saving plants for saving lives and livelihoods has become a global goal. Such awareness is necessary for the conservation and sustainable and equitable use of biodiversity. The syllabus of environmental studies should incorporate information, developments, issues and problems pertaining to the North-East. Today climate change and its implications on the natural environment and human habit are issues of global concern but people are not aware of the fact that climate change resulting from global warming will adversely affect the North-East. The region has already been witnessing erratic rain patterns, untimely flood and drought like situations, which will increase in near future. There is a lack of awareness on how difference in weather would impact on agricultural patterns and produces.

**Suggestions:**

In addition to above mentioned problems in developing Environmental Protection, certain suggestions can be passed so as to enhance environmental conditions –

1. Adequate flexibility must be built into the educational programmes and materials to allow necessary adaptations.
2. The importance of involving concerned government organizations and Non Governmental Organizations (NGO) in strategic partnership is required.



3. A variety of short and long duration Training Programmes for in-service professionals as well as students interested in pursuing a career in Environmental Education should be adopted.
4. The existing syllabus includes only one field work to be conducted by students. But in order to make environmental education effective, there should be stress on practical examples. In other words, students should be given more and more of field projects.
5. There is also a need for environmental law education. Very often our resources, such as the forest resources are not protected well due to lack of proper implementation of the existing laws.

**Conclusion:**

From our above analysis we have come to this conclusion that specified strategies to be adopted in the arena of Environmental Education to ensure Environmental Protection and to save the Mother Earth. The govt. should take initiative to create awareness for *saving plants for saving lives and livelihoods of the people. Such awareness is necessary for the conservation and sustainable and equitable use of biodiversity.* There is a need to bring about change in the behaviour of people. It is not enough to preach what we say once and forget it the next moment. Behaviour and attitude cannot be changed in a day or two for these have been formed over years. We can say that this nature is not a gift from our fore-fathers but a loan from our grandchildren. We have to return their capital and future safely.

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# A STATISTICAL ANALYSIS OF HDI : AN OUTLOOK TOWARDS HUMAN DEVELOPMENT WITH SPECIAL REFERENCE TO ASSAM

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**Abstract :**

*The HDI is a composite statistic calculated for balanced growth of every dimension in modern world. Three normalized indicators –Health (h), Education (e) and standard of living means Income (i) are used to evaluate a index for a certain region or a country. The performance of each country in these three dimension has the range $0<h,e,i<1$ ,which shows the trend of human development of the region. In recent time HDI has attracted great interest in the states of India as it take a prime role in making policy of different fields. Assam takes it position to a higher rank in recent development report framed by planning commission of India. Here an attempt is made to analyze HDI statistically for different states of India. HDI for different districts of Assam is also highlighted and analyzed critically by using some basic statistical tools.*

Keywords: HDI, normalized indicators, balanced growth, statistical tools.

### *Introduction*

The Human Development Index (HDI) is a well known modern technique to measure human development and rank the countries accordingly. It is a composite statistic propounded by Pakistani economist Mahbub-Ul-Haq and a group of scholars in economics, where Indian economist Amartya Sen was also included. It has attracted great interest in policy and academic circles as well as in the media and national



interest in the world. HDI get so much popularity in the sense that development is much more than economic growth. In a message given by the chief secretary of Assam P.K.Datta rightly remarked that –"It is universally accepted that development bears a connotation different from growth in GDP. The economic achievement may not usually reflect the quality of life of a society." According to the views of UNDP –Human development is the end economic growth-a means. So the purpose of growth is to enrich people lives.

The first UNDPs Human Development Report in 1990 introduced a new way of measuring development by combining indicators of life expectancy, education attainment and income into a composite HDI. The breakthrough for HDI was a creation of a single statistic which should be a frame of reference for both social and economic development. The HDI is used to measure and rank countries with the levels of social and economic development based on four criteria-

(a) Life expectancy at birth
(b) Mean years of schooling
(c) Expected years of schooling
(d) Gross National Income per capita

Based upon the four criteria, the HDI makes it possible to track changes in development levels over time and to compare them in different countries. With the help of secondary information of various programme adopted by UNDP and planning commission of India it is tried to study the human development of the country and the state as well.

The recent Human development Report focus about India's HDI has risen by 1.7% annually since 1980. Though it is not a yardstick as compared to the other corners of western countries such as Norway, Brazil etc. Norway has the HDI 0.955 which occupied the rank 1 among the countries of the world. In compared to the developed countries with higher HDI the India's national average of HDI stands as 0.554 in 2013. India has miles to go meet the countries with high HDI.

### *Objectives*:

Here we consider the HDI of Assam and compare it with national status by using some basic statistical tools for the period 2003 to 2013. In the next section —the national HDI in recent period is depicted through some diagrams by which we tried to give an idea about the development of HDI and its performance of different parts of the country. In the later parts we study the regional human development of different districts of Assam and correlate among the various indicators of developments.

*Computation of HDI*

Untill 2010 HDI was defined as a simple arithmetic average of normalized indices in the dimension of health, education and income –

$$HDI = \frac{H_h + H_e + H_i}{3}$$

Where $H_h, H_e$ *and* $H_i$ represents the health education and income sub indices respectively. Each of the indices are in turn estimated as normalized indicators of achievements in each of the following dimensions- life expectancy (le) and GDP per capita are the proxies for health and living standard whereas education dimension used two indicators literacy and gross enrolment ratio(ger). The normalized indicators are found by using the formula–

$$Dimension\ Index = \frac{actual\ value - minimum\ value}{maximum\ value - minimum\ value}$$

After 2010, UNDP has modified the HDI and the report combines the three dimensions as below-

- A long and healthy life: life expectancy at birth
- Education index :Mean years of schooling and expected years of schooling
- A decent standard of living: GNI per capita(pppUS$)

Using the modified version of the HDI the different indicators are calculated as below-

1. Life expectancy index(LEI)=$\frac{le-20}{82.3-20}$
2. Education Index (EI)=$\frac{\sqrt{mysi * eysi}}{0.951}$

   where, $mysi = \frac{mys}{13.2}$ and $eysi = \frac{eys}{20.6}$
3. Income Index( II)=$\frac{\ln(GNI_{pc}) - \ln(100)}{\ln(107{,}721) - \ln(100)}$

Here *mys*=mean years of schooling and *eys*=expected years of schooling

Finally the HDI is computed as the geometric mean of the normalized indicators

$$HDI = \sqrt[3]{LEI * EI * II}$$

***An outlook of India's HDI***

Indian human development report 2011 estimates the HDI for the beginning of the decade. Here we submit the latest year data (that permits) for



representation of India's performance about human development. The first three position goes to the states Kerala, Delhi and Himachal Pradesh respectively, though in earlier report Goa and Punjab performed better on Health, Education and

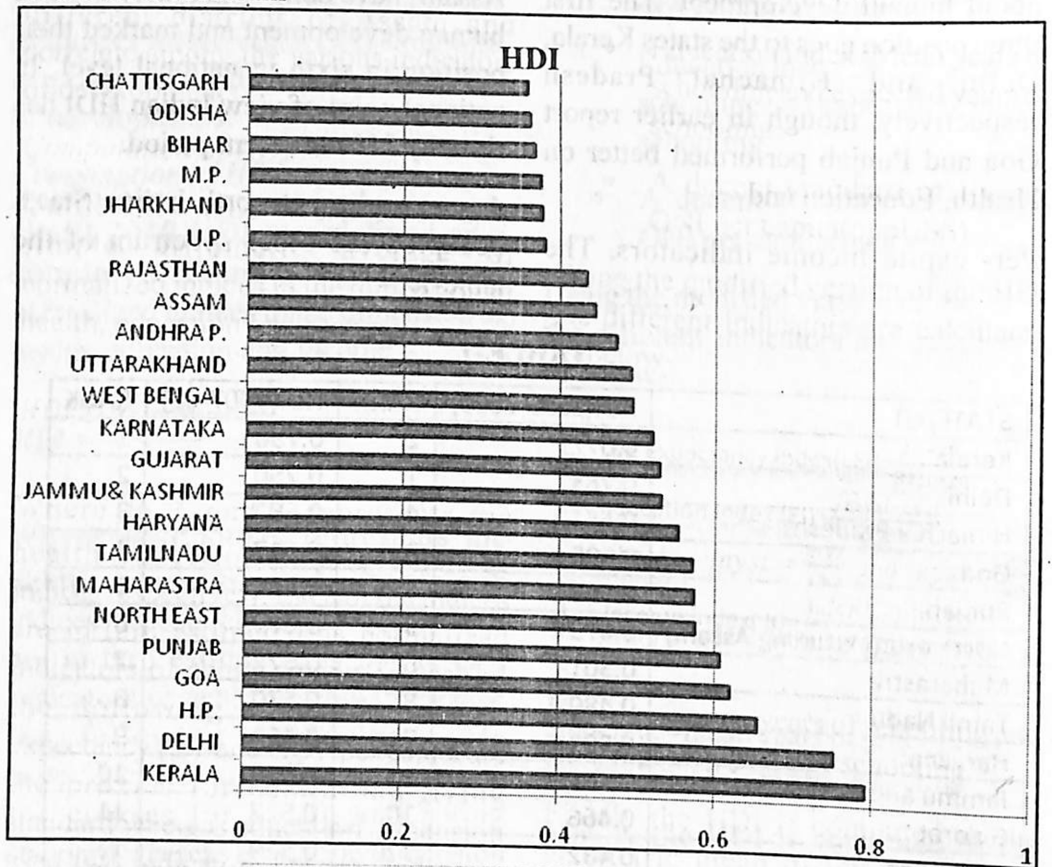
Per- capita income indicators. The seven north Eastern States (excluding Assam) have done remarkably good in human development and marked their position in sixth in national level. In national point of view Indian HDI has risen by 21% in recent period.

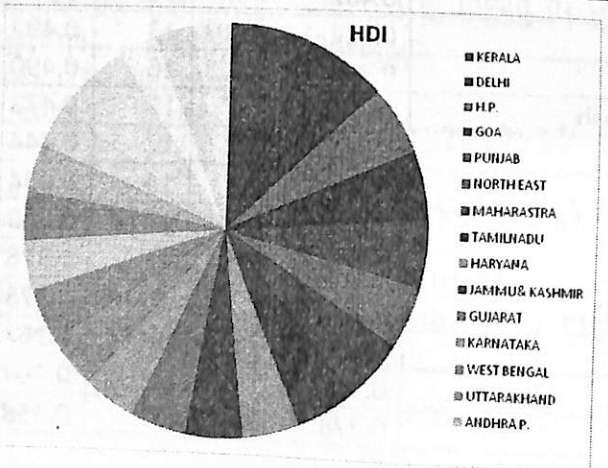
Assam and most north Indian States occupied the other spectrum of the table-1.

**TABLE-1**

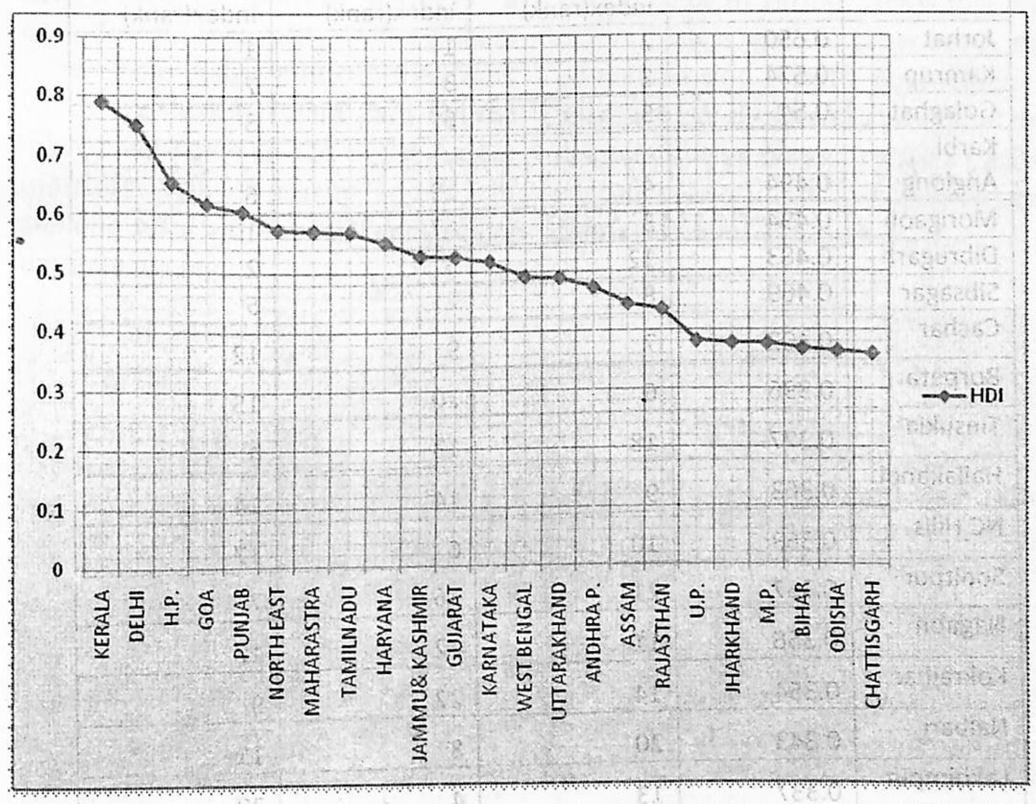
| STATE/UT | HDI(1999-2000) | RANK | HDI(2007-08) | RANK |
|---|---|---|---|---|
| Kerala | 0.677 | 2 | 0.790 | 1 |
| Delhi | 0.783 | 1 | 0.750 | 2 |
| Himachal Pradesh | 0.581 | 4 | 0.652 | 3 |
| Goa | 0.595 | 3 | 0.617 | 4 |
| Punjab | 0.543 | 5 | 0.605 | 5 |
| North east(excluding Assam) | 0.473 | 9 | 0.573 | 6 |
| Maharastra | 0.501 | 6 | 0.572 | 7 |
| Tamil Nadu | 0.480 | 8 | 0.570 | 8 |
| Haryana | 0.501 | 7 | 0.552 | 9 |
| Jammu and Kashmir | 0.465 | 11 | 0.529 | 10 |
| Gujarat | 0.466 | 10 | 0.527 | 11 |
| Karnataka | 0.432 | 12 | 0.519 | 12 |
| West Bengal | 0.422 | 13 | 0.492 | 13 |
| Uttarakhand | 0.339 | 16 | 0.490 | 14 |
| Andhra Pradesh | 0.368 | 15 | 0.473 | 15 |
| Assam | 0.336 | 17 | 0.444 | 16 |
| Rajasthan | 0.387 | 14 | 0.434 | 17 |
| Uttar Pradesh | 0.316 | 18 | 0.380 | 18 |
| Jharkhand | 0.268 | 23 | 0.376 | 19 |
| Madhya Pradesh | 0.285 | 20 | 0.375 | 20 |
| Bihar | 0.292 | 19 | 0.367 | 21 |
| Orrisa | 0.275 | 22 | 0.362 | 22 |
| Chattisgarh | 0.278 | 21 | 0.358 | 23 |

The national average of HDI is recorded on March 2014 as 0.467, which is near to the HDI of Assam






***Performance of human development in Assam***

For a systematic, sustainable development of basic services in a state, planning is very much essential to assess the present status of the districts and region as well. Good governance of a state is also supports the ideology. Human Development Reports provides a basis for such an assessment. Table - 2 provides the HDI of different districts of Assam with the three basic rank wise performance indicators.

Table-2

| Districts | HDI | Income index(rank) | Education index(rank) | Health index(rank) |
|---|---|---|---|---|
| Jorhat | 0.650 | 2 | 1 | 1 |
| Kamrup | 0.574 | 1 | 3 | 1 |
| Golaghat | 0.54 | 5 | 6 | 7 |
| Karbi Anglong | 0.494 | 4 | 19 | 3 |
| Morigaon | 0.494 | 3 | 17 | 6 |
| Dibrugarh | 0.483 | 12 | 5 | 10 |
| Sibsagar | 0.469 | 8 | 2 | 2 |
| Cachar | 0.402 | 7 | 9 | 5 |
| Borpeta | 0.396 | 6 | 20 | 12 |
| Tinsukia | 0.377 | 18 | 13 | 15 |
| Hailakandi | 0.363 | 9 | 14 | 4 |
| NC Hills | 0.363 | 10 | 6 | 14 |
| Sonitpur | 0.357 | 21 | 16 | 17 |
| Nagaon | 0.356 | 11 | 12 | 7 |
| Kokrajhar | 0.354 | 14 | 22 | 12 |
| Nalbari | 0.343 | 20 | 8 | 9 |
| Lakhimpur | 0.337 | 13 | 4 | 11 |
| Goalpara | 0.308 | 14 | 18 | 20 |
| Karimganj | 0.301 | 19 | 11 | 16 |
| Dhemaji | 0.277 | 23 | 10 | 18 |
| Bongaigaon | 0.263 | 16 | 15 | 21 |
| Darrang | 0.259 | 22 | 21 | 22 |
| Dhubri | 0.214 | 17 | 23 | 18 |

From the table it is noticed that there is a significant variation across the districts. Only seven districts can stand their position above the state average HDI value. The remaining sixteen districts have the HDI value lower than the average, which reflects a considerable inequality. Among them most of the districts lies in the Barak valley and lower Assam part. On the other hand some of the upper Assam districts with Kamrup and Karbi anglong results a high HDI values than the state average.

In case of Income index indicator, five districts can be able to show a better performance in various fields than the other districts. On the other hand, the education and health performance index are evenly spread throughout the districts. Jorhat district ranked first in educational attainment, whereas Dhubri district is count at last position.

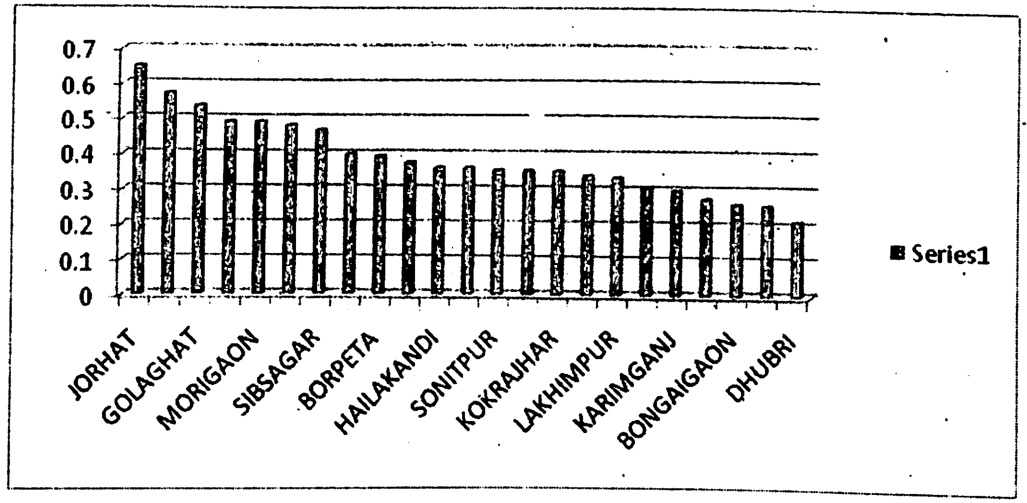



Fig-4 ***HDI of different districts in Assam(2003)***

According to the 1st Human Development Report brought out by UNDP in 1990 –'The real wealth of a nation is its people and the purpose of development is to create an enabling environment for people to enjoy long ,healthy and creative lives.

"Thus the performance indicators for creating such an environment plays an important role to provide human development. Although various sub dimensional indices are considered for computing income, education and health indices, HDI values are primarily calculated from these three criteria only.

Here we consider these three parameters to correlate each other for searching their activity in computing

HDI.

***Results and discussion:***

Using rank correlation method, it is found that the correlated value between the performance indicators income and education is 0.32 and the correlation between education and health indicator is 0.39. Also income and health shows the correlated value as 0.49.A comprehensive idea is found from the analysis that all the indicators are positively correlated and their dimension is same.

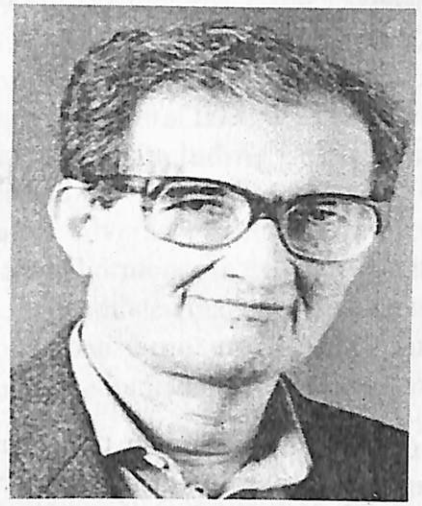
Taking help of t-test for sample mean the significant value of t is found as 0.747which is not significant at 5% level as well as 1% level. Hence the HDI values for the districts of Assam are consistent with the state average 0.407. The fiducial limits at 95%for the population mean (μ) for the HDI values are found as 0.437<μ <0.343 and at 99% fiducial limit is 0.454<μ <0.326.

***Conclusion:***

- The three performance indicators along with their ancillary indices are equally important for calculating HDI values.
- Although a significant part is covered by the three indicators viz. income, education and health attainment, the other
- factors e.g. nutrition, family planning, IMR, population explosion, development in different sectors such as rural and
- urban, male and female etc. are also consider equally.
- The correlated value of the performance indicators are positively related and have deviated in the same direction which establish that if the value of one indicator rises than the other indicator may also affect in the same direction.
- In the state Assam, government should take a well planned policy for upgrading the districts surrounded by hills and mostly occupied by slum area, where the performance indicators and their sub catagories are found low as expected till date.
- Confidence limits for the mean value(μ) for 1% and 5% level of significance is found as 0.454<μ <0.326 and 0.437<μ <0.343 which shows that ten more districts (rank 8 to rank 17) lies below than the state average 0.407 covered by the fiducial limit at 1%level and nine districts (rank 8 to rank 16) is covered by the limit at 5% level of significance. It can be concluded that six districts (rank 18 to rank 23) lies below than the average is not



*Mehbub-Ul-Haq*



*Amarty Sen*

covered by the limit which can be considered more backward in attaining the performance indicators for HDI.

The study can establish a better result, if latest state development report is published by the planning commission, Government of India. Further analysis can be done with the help of updated published data by using some other statistical technique.

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# PEST OR PESTICIDE?

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A pest is any organism that causes economic loss in terms of human welfare, resources which may be a plant or animal raised for food and fibre. The term pesticide covers a wide range of compounds including insecticides, fungicides, herbicides, rodenticides, molluscides, nematicides, plant growth regulators and others. Pesticides are designed to kill and because their mode of action is not specific to one species, they often kill or harm organisms other then pests, including humans.

If that is the case, then why use pesticides?

- Primary cause is to kill the insects and pests and get better and higher yield.
- Secondary cause could be more production will lead to additional revenue that could be put towards children's education or medical care, leading to a healthier population.

Food grain production , which stood at a mere fifty million tons in 1948-49, had increased almost four fold to one hundred ninety eight million tone by the end of 1996-97 from an estimated one sixty nine million hectares of permanently cropped land. Of course it is not only due to increased use of pesticides but due to whole lot of things like use of fertilizers, better varieties, use of machineries etc. According to some scientists (Kole *et al*) most pesticides in the environment undergo photochemical transformation to produce metabolites which are relatively non-toxic to both human beings and the environment.

Vector borne diseases are most effectively tackled by killing the vectors. Insecticides are often the only practical way to control the insects that spread deadly diseases such as malaria, resulting in an estimated five thousand



deaths each day(Ross,2005). The control of disease is equally important in livestock. It has been observed that a diet containing fresh fruit and vegetables outweighs potential risk from eating very low residues of pesticides in crops (Brown, 2004). Increasing evidence ( Dietary Guidelines, 2005) shows that eating fruit and vegetables regularly reduce the risk of many cancers, high blood pressure, heart disease, diabetics, strokes and other chronic diseases. Insecticides are used to maintain the turf on sports pitches, cricket grounds and golf courses. Insecticides protect buildings and other wooden structures from damage by termites and wood boring insects.

Even though we are seeing the advantages of pesticides but there are these harmful effects also which cause a lot of damage to human and animal health. The world wide deaths and chronic diseases due to pesticides poisoning, numbers about one million, per year (Environ News Forum, 1999). No segment of the population is completely protected against exposure to pesticides and the potentially serious health effects, though a disproportionate burden is shouldered by the people of developing countries and by high risk groups in each country (WHO, 1990). The high risk groups exposed to pesticides include production workers, formulators, sprayers, mixers, loaders and agricultural farm workers. Certain chemicals including pesticides are termed as endocrine disruptors. They cause adverse effects by mimicking natural hormones in the body and it has been postulated that they are long term; low dose exposure is increasingly linked to human health effects such as immune suppression, hormone disruption, diminished intelligence, reproductive abnormalities and cancer (Brouwer *et al*, 1999, Crisp *et al*, 1998 and Hurley *et al*, 1998). The magnitude of toxicity risk involved in the spraying of methomyl, a carbamate insecticide, in field condition was assessed by the National Institute of Occupational Health (NIOH). Significant changes were noticed in ECG, the serum LDH levels including cardio toxic effects. An excess of diabetes cases was also found. Results of cancer incidence and mortality follow-up showed an increased occurrence of cancer of the gastrointestinal sites and of the lymphatic and hematopoietic tissue. During the Vietnam War United States military forces sprayed nearly nineteen million gallons of herbicides on approximately 3.6 million acres of Vietnamese Laotian land to remove forest cover, destroy crops and clear vegetation from the perimeter of US bases. This effort known as 'Operation Ranch Hand', lasted from 1962 to 1971 which saw the rise of cancer of American forces as well as the Vietnamese people.

Insecticides have entered our houses as well through the food we take. For determining the extent of pesticide contamination in the food stuffs, programs entitled 'Monitoring of Pesticide Residues in Products of Plant Origin in European Union' started to be established in the European Union since 1996. In Europe, MRL (Maximum Residual Limit) mostly exceeded in beans, followed by pears, bananas and potatoes.

In India the first report of poisoning due to pesticide was from Kerala in 1958, where over hundred people died after consuming wheat flour contaminated with parathion (Karunakaram, 1958). In a multi centric study to assess the pesticide residues in selected food commodities collected from different states of the country (Surveillance of Food Contaminants in India, 1993), DDT residues were found in about 82% of the 2205 samples of bovine milk collected from twelve states. About 37% of the samples contained DDT residues above the tolerance limit of 0.05 mg/kg. The proportion of the samples with residues above the tolerance limit was highest in Maharashtra (74%) followed by Gujarat (70%), Andhra Pradesh (57%), Himachal Pradesh (56%) and Punjab (51%). Data on 186 samples of 20 commercial brands of infants' formulae showed the presence of residues of DDT and HCH isomers in about 70 and 94% of the samples with their maximum level of 4.3 and 5.7 mg/kg (fat basis) respectively. Fatty food was the main source of these contaminants.

More than 90% of water and fish samples from all streams contained one, or more often, several pesticides (Kole *et al*, 2001). More pesticides are detected in urban streams than in agricultural streams. During one survey in India, 58% of drinking water samples drawn from various hand pumps and wells around Bhopal were contaminated with organo chlorine pesticides. Once ground water is polluted with toxic chemicals, it may take many years for the contamination to dissipate or be cleaned up.

According to soil scientist Dr. Elaine Ingham, overuse of chemical pesticides can harm the useful microorganism. Soil microorganisms are required to transform atmospheric nitrogen into nitrates, which plants can use.

Pesticides have been detected also in the atmosphere which causes eye and skin irritation.





Fruits, vegetables, poultry and milk are all laced with high pesticide residues much above the Maximum Residue Limits (MRL) set by the prevention of food adulteration act of 1954. Samples of certain branded milk, for instance, had the highest traces of chlorpyriphos, a known carcinogen. DDT is not recommended for vegetables but 108 times the MRL was found in tomato as found in a survey.Tea samples from Assam, for instance, had 4.280ppm fenpropathrin. The UN food standards, CODEX, fix its MRL at 2ppm.

Indian exports go through a tight scrutiny but, it seems the checks for what India eats are missing. WHO estimates showed that over five lakh people died from self harm. Another very interesting phenomenon observed in Indian population is that they have poor vitamin D level. These results in simple body ache to much more severe complications. But then India has nearly three hundred clear sunny days and hence these sunshine vitamins should be available in abundance. Hence poor vitamin D level in Indian population was shocking. A recent study based on the data of the US National Health and Nutrition Examination survey shows exposure to pesticides could suppress the production of vitamin D. The study was published in 'PLOS ONE' in January, 2012.

If such frightening is the scenario, then what is the way out? Certain measures can be taken to make the whole process much more safe and healthy.

- Regulatory system should be strengthened.
- Never has a state agriculture officer visited the fields to see which pesticides we use and in what proportions, said Kultar Singh, a farmer from Faridkot in Punjab. Hence more active participation from the agriculture officers and agriculture colleges and Universities is required.
- For developing countries it is imperative to use pesticides, as no one would prefer famine and communicable diseases like malaria, but then other ways should be researched.
- 'If little is good, a lot more will be better' that mentality has to be changed on the part of the farmer.

Proper education and proper use is required to increase crop production without harming the environment and without harming human beings and animals.

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# ENVIRONMENT AND CULTURE: ANTHROPOLOGICAL PERSPECTIVE

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**Introduction:**

Environment means the aggregate of all the external conditions which influence and affect the life and development of an organism. The relation between the environment and culture is close and complex. Environment shapes culture, and culture affects environment. The activities of humans and their relationship with their environments now and in days of old are visible in the cultural environment. The cultural environment consists of relics, the cultivated environment, scenery and traditional biotopes. It is protected by means of legislation, collaboration between environmental and cultural administration, and the actions of citizens.

Man could live in almost all parts of the world by altering the environmental conditions by means of his culture and making it favourable to serve his needs. However man has to depend partly on physical environment and natural resources, as he cannot make him absolutely free from influence of environment. That is why different cultures have taken shape in accordance with environments. Thus, environment and culture have close relationship. With this facts and views in the present paper an attempt has been made to bring out how the Ao Nagas in Nagaland adjust themselves in their

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hilly environment. The data presented in this paper has been generated through field investigation in a homogeneous Ao Naga village namely Yajang-C under rural setting in Mokokchung district in Nagaland. Standard anthropological methods and techniques have been used in the field to collect the relevant data.

**The People:**

The Aos, a major Naga tribe, are the principal inhabitants of Mokokchung district of Nagaland state in Indian Union. According to 2001 census, the total population of the district is 2,27,230. Rural population is 196026 and the urban is 31204. The history of the Nagas as to how they came, where from they came etc. are not known by everybody with certainty. No author has been able to give a definite place of their origin, and way of migration. According to mythology of the Aos, they claim that their ancestors emerged from the stone (Jamir and Lanunnungsung, 2005). The name Ao means went or went away (Aier, 1990). They call themselves *'Ni-so-meh'* and *'Sa-mai-na'* (Sen, 1987). According to Ao traditional history they descended from Longterok (which means six stones). Nearby this place they first founded a village named Chungliyimti and settled there for a considerable period. In course of time they crossed the Dikhu river by cane bridge leaving others behind. The people, who went ahead leaving others behind, came to be known as 'Aor' or 'Ao', meaning going or gone. It is at Chungliyimti that they have their origin of history, culture and social setup.

Though the exact route of Ao migration is not known, from various cultural traits left behind it is believed that they came from Burma to Manipur, Manipur to present Chakesang area, from there to Yimchunger area and from there to Sangtum area where lies Chungliyimti they crossed to present place in the north west of the state of Nagaland (Ghosh, 1982). However, most of the scholars have agreed that the Nagas in general and so the Aos also have come from south-east of their present habitat. They have come from different places of Indo-China that is land between India and China, or from South East Asian Islands. They have got similarities of culture with Filipines, Indonesian, Melaneian and Polynesian people.

The Ao Naga belongs to Mongoloid stock. They speak Tibeto-Burman language and are divided into Chungli, Mongsen and Chungki section based on their dialect. They are endogamous and divided into several



clans or exogamous sept. They do not have any script of their own. Nuclear type of families is predominantly found among them. Inheritance is in the male line and in case of absence of sons, only the close agnatic male members inherit the property, particularly the landed property. Though originally animistic, under the influence of missionaries, the people have now embraced Christianity.

**Agriculture:**

Traditional system of agriculture is the main occupation of the people. Having found no other suitable alternative farming, they mostly practise shifting cultivation in large scale. The usual process of shifting cultivation demands the selection of a patch of land on hill slope. The selection of land is normally done in the October month. The auspicious task of selection of field and delineation of its boundary is the function of village council. The senior most people on the advice of his junior members distribute the land for cultivation. According to Ao customary practice, no individual farmer is allowed to operate even in his own land for cultivation unless the village council gives consent for that purpose. The idea behind this practice is not only for safety of the entire surrounding environment from fire while burning the field but also to maintain the forest and ecological balance in the locality. Those who do not have suitable land for cultivation also get on rent for one year as tenant. The slope selected for jhuming, being a community land is allotted to each household. At the time of allotment of land, the size of the family and work force available are the standard norms taken into consideration.

Preparation of jhum fields start in January, after the celebration of Christmas and New Year's Day. Clearing of jungle and felling of trees are done by both male and female. The clearing of vegetation is done with the help of dao, bush knives and axes with great manual energy. Slashing and lopping of trees commences in the early hours of the day and continues till sun-set with a rest period in the mid-day in the field. This operation takes one month to complete as it is the task of individual families. Bushes, scrubs and small trees with thin stems are cut but the trees which are at suitable places for use as climbing poles for beans, gourds, pumpkins are often left standing.

After slashing, the felled trees and scrubs are spread over the field and allowed to dry under the scorching heat. The drying period may last for one month until the slashed material is reasonably dry.

After completion of drying of the slashed material, the burning stage of jhum land comes. Burning is done in the month of March and complete in one day. After burning, each household selects a site for his field house, locally known as *athi/aluchen*. After that, in the first week of April seed sowing is started on an auspicious day which is selected by the Pastor. The particular family, who took the initial stage of cutting jungle, performs the seed sowing first and in this matter they also remain chaste at night before. In case of paddy, seeds are sown broadcast over the jhum field. In all other cases seeds are sown in holes made by *murtchung* (iron blade small hole).

As the sowing is over they leave the seeds for one month to become mature. Then in the first week of May on a suitable date they observe the *moatsu* festival which is associated with the jhum cultivation.

Once the crop is sown, the jhumias pay cursory attention to the crop. While paddy matures the Ao undertake weeding two times. Usually, the first weeding is done after one month from the date of sowing and the second weeding is done after one month of the first weeding, while hoeing of vegetables is a must for after every ten to fifteen days. Weeding of crops is done with the help of hoe, locally known as *alulem*. The hoe is usually a small hoop iron with two pieces of bamboo attached to either end crossing to form a handle.

Harvesting is a continuous process which starts from July and lasts upto October. During this period vegetables are ready for harvesting and from thence onwards there is adequate availability of fresh vegetables. The surplus vegetables are given as gifts to the neighbours or bartered with them. When the vegetables are in abundance they are supplied to the markets of neighbouring towns to fetch some amount, out of which kerosene, oils, spices, salt and utensils are purchased. Harvesting of paddy in the jhum field is undertaken jointly by the able-bodied members of the household, often with additional assistance obtained from among the co-villagers on reciprocal basis. Sickle and sharp indigenous knives are the tools used in reaping the crops. The reapers cut the ears with a very short stalk, gathering a bunch in the left hand and cutting with a sickle (*ninok*) thrown over the shoulder into the reaping basket on the back. Women, girls and elderly man reap, while sturdy young men go round with big baskets



into which they empty the contents of each reaper's basket, taking what they have collected to the threshing floor. The harvested paddy is threshed in the field itself before the separate grains are brought home in baskets. Threshing and other remaining work, including transportation are performed by the members of the concerned household. The grains thus obtained are measured in measuring baskets and carried upto the granary.

Generally, a field is put under cultivation for two years continuously and then abandoned for ten years in favour of another new tract. As a result there are two types of field, one is new field and the other is old field. In this regard, seeds sown in new and old field are also different. As normal practice, crops yield from the new field are used as seeds in the newly prepared field and on the other hand, crops yield from the old field are used as seeds in the old field. The paddy cultivated in the new field is known as '*chakchi*' and that of in the old field is known as '*mosorong*'. '*Mapok*', another variety of paddy is also cultivated, in the new field. Regarding the amount of seeds preservation for the next year cultivation, they follow a common faith. Thus, they preserve that amount of paddy which is harvested in the first round and bring to the threshing floor. The Ao people become busy in the entire year for shifting cultivation as they have activities to perform in both old and new fields in different times.

**Trade in forest products:**

Besides the annual agricultural produce in the form of paddy and some other vegetables, the economy of the people is also enriched by certain products collected from the neighbouring forests. The chief among these are fire wood, thatch and *tokopat* for roofing, broom stick and some amount of timber used in house construction. Some people sell forest products in the market. Generally the thatch and *tokopat* are sold in village level by the villagers. The open reserve forest areas of a village cater to the fire wood requirements of the villagers. The women collect dried twigs, branches and barks of trees to be used as fire-wood. The sale of fire wood collected from the forest has become an important source of earning for many villagers. As they follow the jhum cycle of 10 years duration, greater re-growth of forest is possible and therefore extraction of firewood from their respective jhum fields is not difficult. Firewood selling is a male occupation.

It may however also be

mentioned here that sale of timber is not only an individual understanding. To meet certain requirements of the village, timber is extracted from the village reserve forest which is under the control of the village authority. The money obtained from the sale is used for the construction of community building such as Church and school and for village development. Any timber extracted from jhum fields may be individually sold to earn some cash by individual villager.

Other forest products such as thatch and *tokopat* (leaf of a kind of palm tree) are used by the villagers for their own house roofing and in need, they sale these to each other among them. However a few families earn some cash from the sale of broom stick in the nearby market. Whenever they are in need of cash they sell some jhum products such as sweet potato, pumpkin and cucumber etc. They sale their products in the nearby markets and thus, these market places play an important part in the economic life of the people under study.

**Hunting and fishing:**

The people sustain their economy by hunting and fishing also. The forests of Aos are a fine hunting ground for certain animals such as monkey, bears, deer, jackal, wild boars, elephant etc. As hunting is very important for the livelihood of the Aos, they start practising it from childhood. The youngsters accompany the hunting parties whenever they get an opportunity. They hunt wild birds and animals both individually and in groups. When an animal is killed, the man who makes the fatal attack gets the major share. The rest of the meat is shared equally by all the other members of the hunting team. Generally they use their own indigenous methods for hunting. However as a weapon, gun, spear, etc are used.

The Aos are also expert in fishing and they adopt various methods in the operation. The people under study, go for fishing in their near about river side. Annually they go for community fishing in the month of October. The date and time of commencement is fixed in the annual meeting by the village council. All the arju members, village council members and other oldest person who have retired from the village administration work, together go for fishing and they start early in the morning and stay there in the night. Community fishing is a masculine task and according to their custom, no any female person can participate and observe in this



community fishing. Fishing expeditions are carried out in groups of persons by making small dykes in the streams with bamboo and mud and leafy branches. The water thus accumulated is poisoned with the mixture of particular kind of seeds of a tree or by bleaching powder. The catching of fish is done in the morning 3.00 o'clock. Then all the people together have a feast there and come back to their residence. After reaching their residential area, they gather in the ground of the village with their fishes. Then the *ariju* members divide the fishes by age wise among the people who went for fishing. The highest portion goes to the oldest person among the people. Though the people annually go for community fishing but in general, they go any time for fishing for household consumption.

**Housing Condition:**

A typical Ao house is rectangular in shape and it is built on stilts and above the ground. The height of the piles varies in accordance with the steepness of the slope of the hill in that particular portion. Generally, in construction of a house, use of bamboo is very important. They use bamboo for all purposes in a house such as in the construction of platform, side walls, roof etc. There are two types of bamboo which are found in their locality; one is light known as *ani* and the other is heavy known as *longmi*. The light (*ani*) is used in the construction of the side walls (*jara*) of the house while the heavy (*longni*) is used in the construction of the floor (*atam*). The floor of a house space varies with the size of the family.

The roof is generally two-sloped and *toko* leaves are used for thatching the roof. Tying material is cane. The *toko* leaves for the roof are tied with bamboo strips. The partitions, which are made of bamboo in between two rooms, do not reach the roof. All the side walls, partitions and the floors are made of reed or plaited bamboo. The only difference is the type of bamboo use in the making of side walls and partitions and in the making of floor.

The two most important articles in house construction are bamboo and *toko* (*sara*) leaves which are available in their forest. The villagers go to the forest and cut bamboo and *toko* leaves from their respective land as they require for construction. Usually in the months of December to March before the approach of monsoon, the new construction, repairing and re-thatching of roof are done. They have the belief that if they cut bamboo in the monsoon season, the bamboo does not last for long period and it might be damaged by insect within one week. So, every year in this period (December -March), the villagers repair their houses and re-thatch their roofs. In this process, the clan members help each other. Generally, after constructing a new house, the owner of that particular house whether married or unmarried invites the village council members and church members on a auspicious day as a house warming ceremony before taking the new house. The suitable day is selected by owner on a week day and not on Sunday as they do not work on Sunday. Then all the invitees are entertained with a feast.

They are also very fond of constructing traditional types of small hut whenever needed and wherever they go, for cultivation or in any farming area to take rest, eat and sleep whenever necessary in order to be protected from sun, rain, cold and wild animals etc. In the traditional practices the roofs of the houses are slanting downward with less number of windows making it so steep that rainwater easily falls down. But now, these traditional types of roofing of the houses are not seen among the people under study.

**Sources of water:**

Water is one of the basic needs of our life. The availability of water varies from place to place and also from village to village depending on geographical location and developmental status. Since the people under study are widely distributed in the hills in rural settings, they totally depend on the river and spring water for drinking as well as for other purposes. This water is carried through the pipe or canal system toward the village area, where they usually have a big tank to store. There are also some open tanks and all the people carry water in bamboo pipes from these tanks. Due to scarcity of water and as the tanks are far away from their individual houses, they also store water in iron drums and in the bamboo pipes for 3-4 days and these are not properly washed. In rainy season, they also store the rain water and it is seen only in the tin roofed houses. The preserved water, however, mostly remains uncovered. Generally they use boil water for drinking and cooking.

Storing of water properly is the best way to be away from water contamination. Most of the households under study have medium income and as such they store water in open containers. So, these households are at the high risk due to water pollution because when the water is left open, a large number of micro-organisms from



their surroundings get mixed with water causing water borne diseases. Most of them store water in buckets. Some households also possess overhead cemented tanks where they store the rain water. The only problem with the overhead tanks is that they do not clean the tank regularly so microbes get developed in these tanks. The households are not aware of this type of pollution and this resulted in some diseases. As the people under investigations are not getting satisfactory quality of water and as they keep water in open containers inside the house, all these factors together contribute to diarrhea, cholera, typhoid, jaundice, malaria and gastro-enteritis to these poor households.

**Food Habit:**

The food habit of a community or a group of people is determined by the culture as well as the prevailing ecological conditions. The staple food of the people is rice. The people generally take three major meals a day, which may be termed as breakfast, lunch and dinner. They take different varieties of locally available vegetables with rice. The wild roots and shoots as well as the flesh food (viz.; pork, chicken, deer, beef, elephant, fish, and egg etc.) are their usual delicacies. As a result of the influence of Christianity they have given up the individually prepared rice beer and have switched over to tea drinking. They usually take both black and milk tea.

Generally, they take rice with meat, fish, vegetables and sauce. All kinds of meat are taken and most of the meat comes from domestic animals such as cow, pig, fowl etc. which are mainly imported from outside the state. Dried fish is a favourite constituent item for chilly curry as well as for sauce. Egg is either purchased from the market or generated at home from the domesticated birds (chicken).

They get vegetables from agricultural products and a good number of families also possess kitchen garden. They use the yields of kitchen garden for domestic consumption. The vegetables both agricultural and kitchen garden include papaya, pumpkin, yam, different types of beans, pea, potatoes, tomatoes, lady's finger, cucumber, reddish, chilli, bitter gourd and different variety of leafy vegetables etc. Besides in most of the houses there are fruit tress and bamboo grooves. They also collect edible wild leaves and shoots from their surroundings. But, sometimes, when there is acute need, they purchase vegetables from the nearest market. Purchase of vegetables from the market is however, very rare, mainly because of economic ground. The use of chilli has been found to be very extensive. They are very fond of food like bamboo shoot, tree bean and fermented fish that they considered very special items. They are also fond of spicy food. Most of the cooking includes meat and fish is done simply by boiling.

**Conclusion:**

Tribal all over the country considers forests as their abode. They are a part of forest. The people under study also make their livelihood from the forest, forest produce and forest game. In the process of coping with the prevalent conditions of nature, the tribals have developed certain strategies. Both nature and culture have played their perspective roles in the dynamics of a adaptation. In such cases the balancing has been made, depending on nature on the one hand and the need on the other. Thus it can be conclude with the words of Steward, "the culture and environment are not separate spheres; they are involved in dialectic-interplay what is called reciprocal-causality" (cited in Jah, 1994).

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# AWARENESS AMONG THE HIGHER SECONDARY STUDENTS OF DIBRUGARH TOWN TOWARDS ENVIRONMENT: A CASE STUDY


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## 1.0 INTRODUCTION

Out of all the nine planets, meteorites, and satellites in our solar system, the earth is the only planet known as the support system. Life on earth experiences different types of surroundings. These surroundings may be living or non living. Each living organisms constantly interacts with the surroundings and adapts to it. These surroundings are our environment. The physical environment which consists of soil, air, water, sunlight among others, provides favorable conditions for the existence and growth of different life forms. Living beings constitute the biological environment.

A resource can be defined as any material that can be transformed into a more valuable and useful product or service. Ever since his appearance on earth, man has been dependent on the resources that the nature provides. While air, water, soil, minerals, wind, solar energy are non living resources of


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nature, plants, animals and other organisms are the living form of Environment.

## 2.0 RATIONALE OF THE STUDY:

For the survival, we have to protect our environment and it is possible only if there is awareness to air, water, soil and other Environment.

Due to the continuous increase in population, the demand for Environment has also increased. Technological expansion and scientific progress is most important for conservation of Environment. Environments are the source of living of the organism. The importance of Environment can be understood from the following points.

Over exploitation of non renewable resources will not only lead to economic imbalance between developed and developing countries but also to environmental and ecological imbalance between nature and population growth. Today developed countries are consuming more Environment than developing countries and they are producing more global waste and green house gases. Over utilization of underground water has resulted in the depletion of ground water and the drying of streams and rivers and that is why conservation of Environment is very important for the sustenance of life on earth. The importance of Environment is important from the following points.

Proper utilization of Environment

- Stop soil erosion and prevent flash flood.
- Help in preventing droughts through prolonged gradual run off.
- Trees cleanse the ground because their root system filters water and clears toxins and impurities.
- Trees facilitate storing of clean water maintain the availability of water during summer, when it is most needed.
- Forests hold soil by preventing rain from directly washing away soil.
- They reinforce soil to avoid landslides in mountainous areas.
- The maintain soil nutrients and structures.
- Trees absorb solar energy and cool and refresh the air we breathe.
- They maintain local climatic conditions.



- They absorb carbon dioxide and harmful pollutants and release oxygen into the atmosphere.
- Timber production and other wood-based industries constitute an important part of the national economy.
- Forests supply wood for fuel.
- They supply fodder for cattle.
- Trees provide fibres for weaving baskets, ropes, nets, strings and so on.
- Sericulture for silk, apiculture for honey and pollinating crops, medicinal plants for medicines are economically beneficial.
- Forests provide shelter for tribal people and building materials for others.
- They provide foods, fruits, nuts, flowers, fish and meat.
- Forests facilitate ecotourism.
- Trees provide clean sir.
- Trees provide clean water.
- Environment prevents global climate change through absorption of carbon dioxide, a leading Greenhouse gas, to produce wood and leaf matter, known as carbon sequestration.
- They help in controlling soil erosion.
- They absorb noise and reduce stress.
- They provide an aesthetic place for mental peace and healing qualities.
- They help in controlling climate and heat island effects resulting from city environments.
- Forests help in global recycling of water, carbon and nitrogen.

However, the major problems of developing countries like India are the poverty and illiteracy. People who cannot fulfill their daily needs cannot think about the environment. Ignorance and illiteracy has generated a number of misconceptions and superstitions such as

- Diseases are caused by God's curse and demons. They have nothing to do with infection and hygiene.
- Famines, floods, droughts are God's punishment for the sins of men and have no relationship with environmental management.

- Rainfall is dependent on God's grace.
- Deforestation is the result of the industrial revolution but growing urbanization is not responsible for this.

To get rid of these superstitions and misconceptions about nature, environmental awareness is imperative in India. This awareness ensures that everyone from an environment conscious farmer in the village to a policy planner in the government knows about the consequences of his activities in nature. Agriculture production can get a boost only if people know the pattern of land use, of water resources and irrigation, if they use fertilizers and pesticides judiciously and above all if they are aware of the renewal sources of energy.

In the industrial sector too, people should know about the impact of industrial activity on nature. Industries such as fertilizers, chemicals, pesticides and industries that manufacture different components of the same have come into existence. People must aware about this.

Besides these, industrialization along with urbanization can generate health problems. However awareness about the healthy living conditions and the consequences of ill health will automatically make people conscious about their health and hygienic living conditions.

For developing this awareness, student is a good target. They are the future of the nation. For creating awareness to the mass, it is important to make the students aware about this serious issue. Higher secondary is the intermediate stage between primary and higher education. So it is good to study their awareness so that they can work as a medium of creating awareness to all stages of education and to all sections of people. Through this seminar paper, an attempt is made to study about the awareness of higher secondary students towards Environment.

**3.0 OBJECTIVES OF THE STUDY:**

The major objectives of this study are:

**3.0.1** To study the extent of awareness towards Environment of the higher secondary students of Dibrugarh town through self made awareness scale.

**4.0 DEFINITIONS OF THE KEY TERMS USED:**

The conceptual and operational definitions of the key terms used in the study are as follows.



**4.0.1 Awareness:** Awareness refers to the extent to which a student is conscious towards any object person or situation. In this present study, awareness refers to the scores obtained by the higher secondary students in their awareness scale.

**5.0 METHODOLOGY:**

**5.0.1 Method:** Considering the nature of the data collected, Descriptive method has been adopted in this present study.

**5.0.2 Population:** The population of this study comprised of all the higher secondary students of Dibrugarh town. Session 2011-2012.

**5.0.3 Sample:** For this study, the researcher has selected 106 students using the non probability sampling technique that is incidental sampling.

| Total Number of Students:106 | |
|---|---|
| Number of Students in Science Stream: 53 | Number of Students in Arts Stream:53 |

**6.0 TOOLS USED FOR COLLECTION OF DATA:**

In this present study, following tool and technique were used for collection of data.

**6.0.1 Awareness Scale:** An awareness scale constructed by the researcher consists of 25 questions of multiple choice items.

**7.0 COLLECTION OF DATA:** In order to collect data, the investigator visited the junior colleges and senior colleges of science stream and arts stream of Dibrugarh town having higher secondary classes. Forms were given to the candidates. Necessary oral instructions were given for their proper understanding about the test as well as their role to play. Copying was strictly prohibited. When all the students finished answering, the filled in forms were collected.

**8.0 ANALYSIS OF THE DATA:**

For analysis of data, number of correct responses in an awareness scale is calculated.

**9.0 FINDINGS:**

The major findings of this study are:

**9.0.1** Total 98.11% students i.e. out of 106 students, total 104 students aware that the term environment denotes both living and non living things. Among which all the students of science stream that is 100% (53 students from science streams out of 53) and arts stream 96.22% of students of arts stream that is 51 students out of 53 aware about this fact.

**9.0.2** Total 58.49% of students that is out of 106 students, total 62 students aware that HIV is not transmitted by mosquito bites. Among which, total 75.47% of students of science stream that is 40 students from science streams out of 53 and 41.50% of students of arts stream that is 22 students out of 53 students from arts stream aware about this fact.

**9.0.3** Total 44.33% of students that is out of 106 students, total 47 students aware about one of the advantages of forest is that they act as watersheds. Among which 52.83% of students that is 28 students from science stream and 35.84% of students that is 19 students from arts stream are aware about this fact.

**9.0.4** Total 25.47 % of students that is 27 students out of 106 are aware that $H_5N_1$ Virus is responsible for "Bird Flu". Among which only 15.09% of students that is 8 out of 53 students from arts stream and 35.84% of students that is 19 students out of 53 from science stream are aware about this fact.

**9.0.5** 76.41% of students that is out of 106 students, total 81 students aware that air pollution is protected by environmental pollution act. Among which, 90.56% of students that is total 48 students from science streams out of 53 and 62.26% of students that is 33 students out of 53 from arts stream aware about this fact.

**9.0.6** Total 87.73% of students that is out of 106 students, total 93 students aware that the most possible cause of tension, headache, and high blood pressure, loss of concentration and loss of hearing abilities is due to water pollution. Among which, total 92.45% of students that is 49 students from science streams out of 53 and83.01% of students that is 44 students out of 53 from arts stream aware about this fact.

**9.0.7** Total 33.96% of students that is out of 106 students, total 36 students aware that air pollution is protected by environmental



pollution act. Among which, total54.71% of students that is 29 students from science streams out of 53 and13.20% of students that is 7 students out of 53 from arts stream aware about this fact.

**9.0.8** Total 13.20% of students that is out of 106 students, total 14 students aware that the coolest region of the atmosphere is troposphere. Among which, total16.98% of students that is 9 students from science streams out of 53 and 9.43% of students that is 5 students out of 53 from arts stream aware about this fact.

**9.0.9** Total 64.15% of students that is out of 106 students, total 68 students aware that proper maintenance of machine reduce soil pollution. Among which, total 90.56% of students that is 48 students from science streams out of 53 and37.73% of students that is 20 students out of 53 from arts stream aware about this fact.

**9.0.10** 21.69% of students that is out of 106 students, total 23 students aware that stone cancer is caused by acid rain. Among which, total35.84% of students that is 19 students out of 53 from science streams and7.54% of students that is 4 students out of 53 from arts stream aware about this fact.

**10.0 SUGGESTIONS:**

On the basis of the above findings of the study, the following suggestions may be offered.

**10.0.1** Community forums should be organized including the students to discuss about the problems and difficulty we face due to disuse of Environment.

**10.0.2** Aims and objectives of conservation of Environment should be discussed weekly in tutorial classes.

**10.0.3** Suitable text books and reading materials on conservation and preservation of Environment on regional and national language should be made available.

**10.0.4** Environment of home school and community experiences including the local demands should be included in the curriculum.

**10.0.5** Education should not remain theoretical and verbal, but be practical relating to day to day life experiences with Environment.

**10.0.6** Principle of self responsibility towards the conservation of

Environment should be developed in the students through workshops, seminars, conferences, projects and so on.

**10.0.7** Training of teachers on environmental education is a necessary step to its success.

**10.0.8** Spirit of innovation and experimentation of the students on environment should be given to develop.

**10.0.9** Content of study should include the local as well as global needs.

**11.0 CONCLUSION**

From these above discussion, we can come to the conclusion that how much study of the Environment is important. So it is the responsibility of the educational institutions to promote the study of Environment in every possible manner. Proper involvements of governmental and non-governmental organizations are very necessary especially for financial support. Besides these, the local community people should also be encouraged to participate in conservation of Environment through community meetings and seminars. Then only we can think about a healthy India.


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# ENVIRONMENTAL DEGRADATION:CAUSES, EFFECTS AND ITS MEASURES WITH SPECIAL REFFERENCE TO INDIA


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**INTRODUCTION:**

Environmental problem is the most challenging problem of 21st century at global, national, regional and local level as well. The word environmental degradation means the deterioration of the environment through depletion of resources such as air, water and soil; the destruction of ecosystems and the extinction of wildlife. It is defined as any change or disturbance to the environment perceived to be deleterious or undesirable. The United Nations International strategy for Disaster Reduction defines environmental degradation as 'The reduction of the capacity of the environment to meet social and ecological objectives and need'. Environmental degradation is a global dimension in the present scenario. Now we have entered in to the 21ST century and area of science and technology where our life is going to be more comfortable than ever before.Man is unlimitedly exploiting the nature and disturbing the ecological balance between living and non living components of the environment. Man has created the unfavourablecondition by himself threatened the survival not only of man himself but also other living organism. Environmental degradation badly effects on man, animals and

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plants. The survival and quality of life requires quality of environment. Therefore, it is imperative for every responsible citizen of the world to understand the causes, effects and measures for the improvement and maintain the quality of environment for the greater interest of the society. So, through this paper an attempt is being made to highlight some selected causes, effects and measures of environmental degradation among various causes, effects and measures as well.

## OBJECTIVES OF THE STUDY:

1. To make aware the general people about the meaning of environmental degradation.
2. To point out some main causes and effects of environmental degradation.
3. To provide some suggestions so as to implement the required measures effectively for solving the problems of environmental degradation.

## METHODOLOGY OF THE STUDY:

The data collected for the present study is concentrated to only secondary sources such as books, journal, magazines, internet etc. Descriptive method is followed for the study

## DISSCUSION:

Environmental degradation is the problem affecting the human existence. Today the environmental problem is a very big problem for our country like other developing and developed countries in the world. The environmental degradation is occurring primarily due to excessive and reckless exploitation and unscientific management of natural resources. In fact, it has emerged as a global challenge for all the countries of the world.The environment degradation is mainly caused by the activities of man. Some causes of environmental degradation are mentioned as follows-

**1. Population growth:** India is the second most populous country in the world after China. Now the population of India has crossed the one billion marks. In India population growth is one of the dreadful causes of environmental degradation. Most of the environmental problems are caused by human population growth. Population growth increases the need to produce consume products and this need, in turn, intensifies the trend to over-exploit and misuse environmental resources. The rate of socio-economic, agricultural and industrial development can't meet the demands of the country because of rapid growth of population.Population growth and economic development are contributing to many serious environmental problems in India. The growing population put immense pressure on land, soil degradation, forest, habited destruction and loss of biodiversity, changing consumption pattern, rising demand for energy, air pollution, global warming and climate change and water scarcity and water pollution.

**2. Air Pollution:** The air pollution is one of the causes of environmental degradation in India. The air pollution is generally accomplished through the pollutants of gases and solid and liquid particles of both organic and inorganic chemical. Some gases such as sulphur dioxide, carbon monoxide, hydrogen sulphide emissions from volcanoes, swamps, dusts, salt spray etc., are continuously added to the air pollution. Thus the air becomes polluted when its natural composition is disturbed either by natural or man- made sources or activities or by both. Indian cities are among the most air polluted in the world. Air in metro pollutant cities has become highly polluted and pollutant and concentrations exceeds limit considered safe by the World Health Organization (WHO). It is found that the suspended particulate levels in Delhi are many times higher than recommended by the World Health Organization (WHO). The urban air pollution has grown across India in the last decade are alarming. Some of the most important air pollutants are residual suspended particulate matter, nitrogen dioxide (NO2), carbon monoxide (CO), lead sulfur dioxide(SO2) etc. The main factors accounts to urban air quality deteriorator are growing industrialization and increasing vehicular pollution, industrial emissions, automobile exhaust and the burning of fossil fuels kills thousands and live may more to suffer mainly from respiratory damage, heart and lung diseases. In India most of the metropolitan cities the air is contaminated with lead from vehicle exhaust. In India's largest cities like Mumbai and Delhi about one-half of children undergo 3 show signs of harmful exposure to lead, defined as to or more micrograms of lead per deciliter of blood (IIPS and ORC Macro, 2000). The illness and pre- mature deaths due to ambient suspended particulate matter (SPM) in the air in mega city of Calcutta, Chennai, Delhi and Mumbai have risen significantly in less than five years (Brandson and Honmon, 1992). The indoor air pollution may pose an ever greater hazard for human health. Cooking and heating with wood, crop residues, animal dung, and low quality coal produce smoke that contains dangerous particles and gases. When fuels such as these are burned indoors, using inefficient stoves and poor ventilation, they can cause tuberculosis, other serious respiratory diseases, and blindness ( Mishra, Retherford and Smith 1999).In fact, indoor air pollution from cooking and heating with unsafe fuels has been designated by the World Bank as one of the foremost critical environmental problem in developing countries.

**3. Water pollution:** The water pollution is one of the major problems of environmental degradation in third world cities like India. In the developing world, much of the population is affected by this problem. A great concern is that billion of people don't have access to clean water required for basic everyday activities such as, drinking, cleaning, cooking and farming. Our water bodies are ponds, lakes, sea, rivers, oceans which have become polluted due to industrial development and urbanization, agricultural sources and cultural sources(religious fairs and pilgrimage) kumbha fair at Allahabad is an example of cultural sources of water pollution. There are some natural sources of water pollutants such as, soil erosion, volcanic eruption, landslides, coastal and cliff erosion, floods, decomposition of plants and animals. Water use in India has been increased over the past 50 years. Out of the total annual freshwater withdrawals, the largest share goes to agriculture at 92 percent. Industrial are accounts for another 3 percent and domestic use 5 percent. The water pollution in India comes from three main sources such as domestic sewage, industrial effluents and run off from activities such as agriculture. Major industrial sources of population in India include the fertilizers plants, refineries, leather tanneries, paper and pulp mills, metal plating and other chemical industries. The second main source of water pollution in major cities in India is due to sewage pollution which includes human excreta, paper cloth, soap, detergents, etc. These pollutants enter in to our lakes, ponds, stream or rivers and as a result it gets polluted.Agricultural discharges are also another kind of water pollution. Modern agriculture rely heavily on a wide range of synthetic chemicals which include various types of fertilizers and pesticides. Their discharges reach into the water bodies. The chemicals are very dangerous, harmful and disturb the natural ecosystem.

The increasing river water pollution is



the biggest threat to public health. Different types of diseases like cholera, diarrhea, hepatitis, typhoid amoebic and bacillary and dysentery etc. are caused due to water pollution. Inadequate access to safe drinking water and sanitation facilities leads to higher infant mortality and intestinal diseases. More than one million children died due to diarrhea and other gastrointestinal disorders in 1990s, In addition, around 90 lakh cases of acute diarrhea diseases have been reported in India.It is estimated that 73 million workdays are lost every year due to water related diseases. The cost of treating them and the lost in production amount to Rs. 600 crores a year (citizen's report, 1982).

**4. Deforestation:** The story of deforestation is another of the highly serious environmental issues in India. It is predicted that almost 5.3 million hectares of forest have been destroyed since the independence. Mostof it being used for housing, industrialization and river projects. It is estimated that the number of Mangrove forests have more than halved in the last 20 years. Rapid increasing population, especially in developing countries, is the main cause for deforestation who need more land for agriculture purposes to grow food. Deforestation has many causes such as cleaning for farming, clearing for grazing pastures, slash and burn agriculture, harvest for fuel wood, logging, and making space for inhabitants.

Due to the increasing rate of deforestation heavy amount of rain causes flooding, erosion, and landslides leadingto serious hydrologic problems.The erosion of topsoil is serious and leads to nonexistent viability of arable land, siltation of rivers, and further erosion. The siltation of streams and rivers can hurt wildlife and make water supplies for people unusable. Another global effect of decreasing forests is the release of stored carbon back into the environment. The more forests that are burned, logged, and cut down puts more stored carbon in to the biotic system which contributes to global warming. Tropical rain forests also produce oxygen on large scales and contribute to our global aerobic biome. As the rapidincrease ofpopulation indeveloping countries like India the demand for fuel wood for cooking and heating, and agricultural land will also increase which decrease the areas of forest land.

**5.Habitat fragmentation:** Habitat fragmentation carries long term environmental impacts, some of which can destroy entire ecosystems. Habitat fragmentation is a less obvious, but more insidious threat to species and the ecosystem they rely upon for survival than habitat loss and degradation. Human developments, roadbuilding deforestation, conservation to agriculture and grassland or pasture are some of causes of habitat fragmentation. There are some problems that arise from habitat fragmentation like smaller populations due to smaller amount of habitat, isolation of populations in fragmented parts which allows for greater possibility of extinction, the potential increase in predators, competitors and parasites, habitat fragmentation often yield a significantly different physical and biotic environment than existed before. Thus habitat fragmentation can destroy entire eco-systems which are big problem for the survival of man, animals, plants and other non-living components of environment.

**6. Noise pollution:** Noise pollution is one of the causes of environmental degradation. It may be defined as the state of discomfort and restless caused to man by unwanted high intensity sound known as noise and the production of unbearable high pitched sound is called noise pollution.The noise pollution is caused by both natural sources and human activities. The natural sources include cloud thunder, high intensity rainfall, storm and hail storm and heavy rainfall. The human activities sources are automobiles, factories, industries, trains, aeroplanes, loud speakers,radio, television, religious functions pressure cookers, cooler, family celebration, etc.

The noise pollution effects on human health in many ways such as auditory fatigue and deafness, interference with speech communication, irritation, annoyance and loss of working efficiency and physiological disorders, etc.

**7.Radioactive pollution:** Radioactive substances are most toxic as compared to organic poisons, which have the harmful and injurious effect. Nuclear war materials, test explosions, great rush for power plants and radio-isotope use in medicines, industry and research are the main sources of radioactive pollution that could threaten or degrade the quality of environment. The natural sources of radioactive pollution include radium, uranium, thorium, potassium, carbon etc. The human sources of radioactive pollution are atomic bomb, nuclear reactors and other radiation sources are radio isotopes such as iodine, strontium, plutonium, cesium etc.

The isotopes in human tissues cause serious hazard to man. Man's radiation



exposure from artificial sources is already sufficient to produce serious disease such as bone tumors, genetic damage and infant mortality. Cosmic rays and ultraviolet rays cause harmful effects on human health which may include cancer.

**8. Industrialization:** Rapid industrialization has been the foremost contributor to environmental degradation. Based on the information collected through various sources, it is found that most of the industries adopt the technologies that place a heavy load on environment. This technologies lead to intensive use of resources and energy. The current pace of industrialization therefore is resulting in the depletion of natural resources like fossil fuel, minerals and timber, and contamination of water, air and land. All these are causing immense damage to eco-system and leading to health hazards.

**9. Agricultural run -off:** The economy in the entire North-East India is agrarian in nature. The agricultural farming activities contribute to soil erosion, land sanitation and loss nutrients. Agricultural run-off is a deadly source of pollution which can degrade environments, so much so that the agriculture as the primary source of water pollution, surface water washes over the soil and into lakes and streams. When does so,it carries the fertilizers and pesticides used on the farm lands in to water resources and becomes acidic where neither plants nor animals can live in these environments.

## MEASURES TO REDUCE ENVIRONMENTAL DEGRADATION:

Today environmental degradation is a serious problem which needs to be reduced to such extent where the people of the world can live peacefully and the existence of the human civilization, other living organisms on earth is possible. Some measures are discussed as follows:

1. Removing subsidies: To reduce environmental degradation subsidies for resources used by the private and public sector should be removed. Subsidies on the use of electricity, fertilizers, diesel, petrol, gas, irrigation, water etc., lead to their wasteful use and environmental problem. Removing or reducing subsidies will bring both economic and environmental benefits to the country.
2. Clarifying property rights: Lack of property right leads to overgrazing of common or public lands, deforestation, over exploitation of minerals, fish etc. thereby causing

environmental degradation. Clarifying and assigning ownership titles and tenurial rights to private owners will solve environmental degradation. Moreover, rules and regulations should be made for the proper use of resources.

3. Reducing poverty: Measures should be taken to reduce poverty by providing employment opportunity, health and family planning and education to the poor. Further making investments in providing civic amenities such as supply of safe drinking water, sanitation facilities, alternative habitats in place of slums etc. will not only improve welfare but also environment.
4. Regulatory policies: Regulatory policies also help in reducing environmental degradation. Regulators have to make decision regarding price, quality and technology. It lays down technical standards and regulation and charges on air, water and land pollutants.
5. Economic incentives: This is another method through which environmental degradation may be reduced. Under this policy rewards are given to the farms which generates less waste or pollution.
6. Improving information:Ignorance is a serious impediment to finding solution. So, measures should be taken to provide necessary information to public regarding various pollutants and their bad affects.
7. Public participation: Public awareness and participation are highly effective to improve environmental condition. Conducting of formal andnon-formal education programmes relatingto environment management and environmental awareness programmes can go a long way in controlling environmental degradation and keeping the environment clean.
8. Raising the economic status of women: Improving the educational attainment of women and increasing their range of alternatives raise the opportunity of their time and may lead to decrease in desired family size. Education also tends to increase women's access to information concerning child nutrition and hygiene, thereby reducing child mortality. It is important that community based environment program work closely with women because their own day today activities may largely determine patterns of resource use and thus ability to meet the needs of their families independent on the sustainable management of water and fuel supplies.





**CONCLUSION:**

In conclusion it is noticed that almost all developed and developing countries have their own acts to protect their environment. In India also, several acts on environmental awareness enacted since pre -independence period both at state and central Government levels to prevent and control different components of the environment such as the Maharashtra Prevention of water Pollution Act (1953), The Motor Vehicles Act (1938), National Forest Policy (1952), National Committee on Environmental Planning and Coordination (1972), The Orissa River Pollution and Prevention Act, (1954), Water Pollution Control Act, (1974), The River Boards Act, (1956), Wild life Protection Act, ( 1974 ), The Gujarat Smoke Nuisance Act (1963), Forest Conservation Act,(1980) Prevention and Control of Air Pollution Act, (1981), Environmental Protection Act (1986), The Atomic Energy Act, (radiation protection rules ), 1962 and several other acts promulgated from time to time. In India though there is a large list of environmental acts and legal laws at state and central levels to prevent and control environmental degradation but till today there is an environmental problems in India due to lack of proper practice of acts and laws. There is an urgent need that executives, administrators and organizations must work sincerely and honestly to enforce the environmental acts and laws properly in preventing and controlling environmental pollution. At last it can be said that environmental education should be given to every citizen of the country as an instrument of making aware regarding the prevention and protection of environmental degradation so that quality of environment can be improved and maintained.

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# RESISTANCE AND PROTESTS AGAINST VIOLATION OF ENVIRONMENT IN BIBHUTIBHUSHAN BANDYOPADHYAY'S *ARONYAK* & MAHASWETA DEBI'S *ARANYER ADHIKAR*

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***Abstract:*** *The schedule tribe and other traditional forest dwellers act passed in the Parliament on 2006. This is not only a historical moment but also a landmark legislation that recognizes the struggle for the rights of forest of tribal people. There is long and glorious history of this struggle. It is evident from the fact that from the colonial period the forest dweller tribes have been struggling. As a consequence many tribal rebellions happened. Though there were many causes behind it, the violation against forests as well as environment was one of it. Their movement questioned our modern development, industrialization and environment policy too. Some authors were influenced with this movement and situation. Bibhutibhushan Bandyopadhyay(1894-1950) was one of them. He is well-known as a nature lover. In his famous novel Aronyak (1939) he portrayed how the aggression of modern civilization destroyed the forest of north Bihar (now Jharkhand). He was also taking part in this destruction, as a result from his regret he wrote the novel. Through his novel he made resistance against violation of environment. Mahasweta Debi(1926-) wrote her novel Aranyer Adhikar (1977) on the life and struggle of Birsa Munda. Munda rebellion under the leadership of Birsa Munda happened not*



*only due to their economic exploitation but destruction of forest was one of the main causes. Although, more than seven decades have been passed, the publication of these two novels is very much contemporary and modern in the present situation. These two novels deal with this dilemma which is very similar with the problem of life, livelihood, rehabilitation and also violation of environmental policy owing to development, industrialization, establishment of SEZ etc.*

*The main objective of this paper is to reflect the picture about how these two novels are arousing its voice against the violation of life, livelihood and environment.*

**Key Words:** Tribal, rights of forest, environment, development, rehabilitation.

In the history of Bengali literature Bibhutibhushan Bandyopadhyay is well-known for his nature loving character. Most of his literary works are written from his own life. At the preamble of his novel *Aronyak* he informed his reader about the reason to write this kind of story. His words were listening like confession. Once he got a job in one of his friend's zamindari estates at the district of Purnia in north Bihar (now in Jharkhand), for looking after the distribution of agricultural land among the ryot. It was near about twenty to thirty thousand bighas (Approximate 1000 acre) forest land. The Zamindar's intention was to collect maximum tax from the distribution of the land. So it was compulsory to destroy the forest to transform it as fertile agricultural land. Nature lover Bibhutibhushan couldn't take it from his heart. He was suffering agony of his own conscience. This is clearly reflected in his novel—"*Amar e smriti anander noi, dukhher. Ei sachchhanda prakitir lilabhumi amar hatei binasto hoiyachhilo, baner debotara amai kakhono khama koriben na jani. Nijer aparadher katha nijer mukhe bolile aparadher bhar shuniyachhi laghu hoiya jai. Tai e kahinir abatarona.*"[1] [This memory of mine is not of joy, it is the memories of grief. This natural beauty was smashed by my own hand. I know for this act the God and Goddess of forest will never pardon me. I heard if anyone confessed about his own sin then the offence became reduced. That's way I am writing this novel]

In this novel he was bound to do his job honestly. He saw the poverty of the forest dwelling people through the eyes of a philanthropist. He couldn't make any protest against it. All through the novel he was feeling a conflict between his City Centric position and his humanitarian entity. That's why he felt the anguish when he executed employer's order—"*Amar uparwala kramagato amake chhithi likhiya tagada korite lagilen, keno ami ekhankar jami prajabili koritechhina………………ei nirjan shobhamoy prantar aranya, kundi, shoylamala janapade parinata hoibe……… se janapad ami monoshchhakhke spasta dekhite pai.*"[2] [My employer regularly sending me letter by asking why don't I distributing the forest land among the ryot……..This lonely forest land, lake, hill will converted into human habitation………….That territory will seen by my imagination]. Though he was conscious about the aggression of civilization but he didn't make any protest against it. At that time he was not influenced by any kind of political or idealistic thought, and then he made a silent resistance against the brutal attack of civilization. Day by day the temperature of the world is increasing. Global warming is threatening us every day in every moment. We can't deny development of human civilization is one of the main causes of global warming. From today, near about seventy five years before Bibhutibhushan Bandyopadhyay bewared us in his novel *Aronyak* about the so called 'development', economic growth etc.—-"*Manush ki chai—unnati na ananda? Unnati kariya ki hoibe jadi tahate ananda na thake? Ami emon loker katha jani, jahara jibone unnati koriyachhe bote kintu anandake haraiyechhe. Atirikta bhoge manobrittir dhar khoiya khoiya bhonta—easkhon r kichhutei temon ananda pai na, jibon tader kachhe ekgheye, ekranga, arthahin. Mon shan-bandhano—ras dhukite pai na.*"[3] [What does a human being want—development or happiness? What will be in growth if there is no joy? I know some people who improve himself lot but lost his ecstasy. Excessive enjoyment makes a human being's mentality blunt. He lost his flavor of existence; life becomes boring to him, meaningless and colourless too. Development concretizes his mind, and then the taste of life can't enter his mind.] Bibhutibhushan well informed about this kind of consumerism and commodity fetishism which are the contribution of modern civilization. He had understood the present problem of modern society near about seventy five years before.

Environment is not only the forest and nature but the tribes of forest or other traditional forest dweller[4] are essential part of environment. Bibhutibhushan was concerned about them also. Dobru




Panna Birbardi who was a leader of Santhal Rebellion, is also an important character in this novel. Being a people of modern civilization the novelist expressed his enthusiastic respect to the character. With this the author also questioned about the right of tribal upon forest. Some tribal people are very close with forest. *Verrier Elwin* mentioned the relation between tribal and forest—-"they love the forest with a passionate devotion. It is to them, ' the forest of joy ', ' the forest of sweet desire '. It is the scene of the early romances of their childhood, the arena in which they engage upon their most heroic struggles with nature. The Baigas regard themselves as the true *Pashupati,* the Lords of all wild animals; the magical protection of the forest is their charge;"[5] Bibhutibhushan knew if the tribal evicted from the forest they will lose their identity, their ethnicity with this an epistemology will be wipe out from the world. Forest is a part of natural wealth, assets of the whole community but the state makes some part as private property and some part transformed into reserve forest. This transformation of natural property snatched the life, livelihood and right of the forest from the forest dwellers without giving any rehabilitation. Bibhutibhushan mentioned several times about the Mohanpura Reserve Forest in connection with this problem in *Aronyak.* When he wrote his novel, India was ruled by British Government. British Act was unable to address the problem. The dreams of the author to some extent were materialized when Indian Parliament recognizes his demand on 2006 by passing The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition Of Forest Rights) Act, 2006.

Mahasweta Debi, a stalwart novelist was demanding this kind of act for a long time. It will be difficult to understand her literary works if one deny her position as a socialist activist. Her recent work related to the study of the *Lodhas* and *Shabars*, the tribal communities of West Bengal, Women and Dalits has discussed extensively. Her activities were not limited to West Bengal only. She also dedicatedly associated with the struggle of the tribal people of Bihar, Madhya Pradesh and Chhatisgarh. She often depicts the brutal oppression of tribal peoples and the untouchables by potent, authoritarian upper-caste landlords, lenders and venal government officials in her Bengali fiction. Mahasweta Debi has recently been spread heading the movement against the industrial policy of the government of West Bengal. She has strongly criticized confiscation of large tracts of fertile agricultural land from farmers by the government and ceding the land to industrial houses at throwaway prices. She has also criticized the policy of commercialization of Santiniketan of Rabindranath Tagore, where she spent her formative years. Her activities influence a number of intellectuals, artists, writers and theatre workers to join in protesting the controversial policy and particularly its implementation in Singur and Nadigram. She is asupporter of Budhan Theatre- the theatre group of Chhara Denotified Tribals of Gujarat.[6] Her social activity always reflects in her literary works, *Aronyer Adhikar* is not an exception.

As a genre *Aronyer Adhikar* is a historical novel based on the story of life of Birsa Munda and the Munda Rebellion under the leadership of Birsa Munda. The story of the novel is not the issue of our discussion. We want to focus on the resistance and protest against the violation of environment and their ethnicity as reflected in the novel. At the introduction of the novel Mahasweta told us that Munda rebellion was happened not only to raise concern against the foreign government and their exploitation but it was also against the contemporary feudal system.

In the history of India nineteenth century would remarkable not only for 1857 Mutiny but for many tribal rebellion. Before the Mutiny 'Hul' (The Santhal Rebellion) of 1855 and after Mutiny, peak level of Munda Rebellion (Though it was started on 1820) of 1895-1900 pestered the British Government. The similarities between these two tribal rebellions occurred due to economic and administrative exploitation with the tribal and the government was snatching the rights of the jungle from the tribal. We mentioned earlier from Verrier Elwin the relation between the tribal and the forest. Mahasweta expressed her own opinion through her writings—"*Aronyer adhikar Krishna Bharater adi adhikar. Jakhan sada manusher desh somudrer otale ghumachchhilo, takhan thekei Krishna Bharater kalo manushera jungleke ma bole Jane.*"[7] [The occupation of the forest is the black India's fundamental right. When the civilization of the white people were sleeping under the sea, from that time the black people of black India knew the jungle as their mother] Mahasweta make the jungle as a 'mother' myth of the Munda people. It is true that tribal people and forests are closely related to each other. The Munda people knew




that jungle is a undetectable part of their life. They had chosen their livelihood from the forest. But they were not so conscious about that jungle is their mother. Mahasweta imposed this 'mother' myth in her novel and that come from her consciousness of environment. Though she is not a recognized environmentalist like Sundarlal Bahuguna (1927-) or Medha Patkar (1954-) but her position is looking like an environmentalist. For long time she struggled for the tribal people and she believed their right over the forest. Her believe influenced her to create this myth. She used this repeatedly. We can take some of the examples——

1. "*Ha jangol! Tumi balo na kene, tomar daya kere nibar hak karo nai?......Jangol to sakal Mundar ma! Kintu Birsa bujhte parchhilo or aronya janani kandchhe. Aronya dharshita, dikuder hate aainyer hate bandini. Janani aronya bolechhilo 'more bancha Birsa. Ami sudha shuchi nishkalanka habo.*[8] [O jungle. Why don't you tell that no one has the right to grab your kind?............ Jungle is the mother of every Munda. But Birsa understood that his jungle mother was crying. Jungle had raped, jungle was prisoned by the non-tribal and law. Mother jungle told 'save me Birsa. I want to be sacred, cleaned and holy.']
2. "*Matite mukh gashchhilo Birsa, gachher gaye ga ghshchhilo. Shishur mato dhusahoshe asombhab pratishruti dichchhilo aronyake 'dibo, dibo tomare shudha kore, ha tumi mor ma bato, sakal mundar ma bato, toma hote gharer chal, gharer dewal, khudhai kanda-fal-mul-kharabara-shajaru-harin-pakhir mansa go ma!*"[9] [ Birsa was rubbing his face at the field and body with the tree. He was giving impossible promise to the jungle like a child 'yes, yes I will make you cleaned, you are my mother, you are the mother of all Mundas. We got everything; foods, materials for making home from you].

After the burning of Birsa's dead body, one very small character of the novel Sali collected the ash and told Shiban that she will scatter the ash of Birsa in the air of the jungle.[10] This incident expressed their love with the jungle. This kind of pro-environmentalist standpoint was not very important for the novel. Mahasweta wrote this novel on 1977 when she saw the state structures were snatching the occupation of the tribal from the jungle. That's why even a historical novel by genre, the appeal of the novel touched the contemporary problem of violation against environment. Like Bibhutibhushan Mahasweta made a protest against destroying the ethnicity of the tribal people. Bibhutibhushan's protest was silent but Mahasweta's protest is direct and loud. We mentioned earlier that The Scheduled Tribes And Other Traditional Forest Dwellers (Recognition Of Forest Rights) Act passed on 2006. During the course of writing of this novel, tribal people were continuously harassed by the police and the law. Mahasweta portrayed in the novel during that time tribal people were also facing the same problem. Verrier Elwin remarked one of his own experiences which are very similar with the problem what Mahasweta mentioned—"…. they have derived their material sustenance from it for hundreds of years. The reservation of vast tracts of forests, inevitable as it was, was therefore a very serious blow to the tribesman. He was forbidden to practice his traditional methods of cultivation. He was ordered to remain in one village and not to wander from place to place. When he had cattle he was kept in a state of continual anxiety for fear they should stray over the boundary and render him liable to what were for him heavy fines. If he was a Forest Villager he became liable at any moment to be called to work for the Forest Department. If he lived elsewhere he was forced to obtain a license for almost every kind of forest produce. At every turn the Forest Laws cut across his life, limiting, frustrating, destroying his self confidence."[11]

In the novel and in reality Mahasweta Debi has been struggling for the rights of the tribal. Government recognizes her anxiety over tribal ethnicity by considering her novel for Sahitya Academy Award in 1979. Passing The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition Of Forest Rights) Act, 2006 the demands of Mahasweta Debi comes true. The government promises 'humane' displacement followed by relief and rehabilitation. However, the historical record does not offer any room for hope on this count: an estimated 40 million people (of which nearly 40% are Adivasis and 25% Dalits) have lost their land since 1950 on account of displacement due to large development projects.[12] Beside the novel Mahasweta Debi was showing her solidarity with the people who were fighting against these forceful land acquisitions by the state government of West Bengal. In this age she wrote column after column against the SEZ Act 2005 and land acquisition. She mentioned in one of her column that minimum environment policy will hamper due to SEZ. [13] She also expressed her great anxiety about the tribal that they will lose their identity and ethnicity due to new modern development and industrialization. As a whole the environment will suffer for the violation.

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# LIBRARY : TRADITIONAL AND MODERN ENVIRONMENT

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Reading a poem by Robert Southey, 'The Scholar' where it aptly describes the influence of books it had on him while spending time in the library. He called the books and the environment in the library his 'never-failing friends'. Robert Southey owes his knowledge and understanding of literature and life for the time he spent reading books in the library. The poet says, he tries to learn from the writers and books in the library.

......from their lessons seek and find

Instruction with an humble mind.

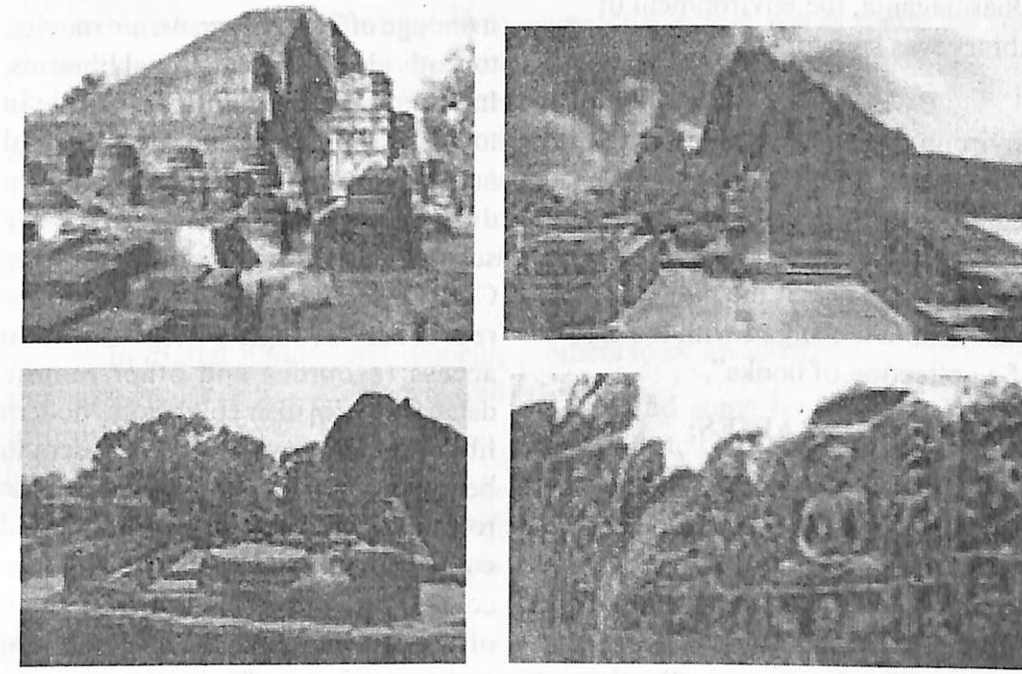
Thus 'Library' is a place where books are kept for 'reading, studying and reference' and come to gain knowledge and wisdom. On the other hand 'environment' means 'the physical conditions that exist in'. The library has also a virtual environment. The physical library environment is fully quite and calm where knowledge is gained by the reader. The library environment demands automatically a pin drop silence. Every book contains author's philosophy. There is an atmosphere to 'know' and 'know-how' in every library. The library has both old and new books and also latest writers and journals.

TRADITIONAL LIBRARY:

In ancient age, library was a storehouse of books and librarian was the custodian. But the environment of Nalanda University Library was completely differed. The name of ancient Nalanda library (5th century AD-1197AD) was Dharmaganja. There were three library buildings like Ratnasagara, Ratnadadhi and



Ratnaganjaka. The library was built in a 'finely built stone building'. Each manuscript was placed on iron shelves or stacks and covered with cloth and tied up. The library collection was in various disciplines e.g. religious manuscript, grammar, logic, astrology, astronomy, and medicine. The library had a classification scheme based on text, developed by Panini. At that time, people come to library for their thirst for knowledge. The librarian in charge was not only responsible for maintaining the materials but also to guide readers in their studies.



Nalanda university library (Dharmaganj)

The environment of Dharmaganj was a reading environment. It was an interaction between author and reader. There were no records of book issued and return.

In Assam, Sankardeva (15th century) kept books and documents in 'Namghara'. He expected that people would come to a religious place and the gathering would see and read the religious books like Bhagavata, Mahabharata etc. At that time, book reading, discussion of theme and transferring knowledge to people was the environment of namghara of Assam. Banikanta Kakati rightly says that ancient libraries of Assam begin in Namghara. The namgharia plays the role of a Librarian.

After the ruined of Dharmaganja, the environment of library was so poor.

By the 19th century, a library environment was created all over the India. At that time, a library was regarded as a "building, room or set of rooms containing a collection of books for the use of the public......or establishment charged with the care of a collection of books".

**MODERN LIBRARIES:**

The modern library environment demands the use of documents. SR Ranganathan (1892-1972), the father of Library Science stresses upon his third law 'every book to its reader'. Modern libraries are a collection of materials organised to provide physical, bibliographic and intellectual access to a target group, with a staff that is trained to provide services and programmes related to the information needs of the target group (2001).

From twentieth century in India, library environment has drastically changed. Now it becomes a service institution. User can go to the shelves and take his/her book without any hesitation. The knowledge has become increasingly complex. ICT (Information and Communication Technology) changed the nature of the libraries from traditional to automated libraries. Now in the age of 21st century, we are moving towards electronic and digital libraries. Information plays an important role in today's complex economic, political and social environment. In modern digital environment, libraries are subscribing various e- resources viz. CDROMs, online resources, e-resources through consortia, open access resources and other remote database etc. in their collection. Modern library environment demands users to be information literate. By the way, the role of librarian and library staff should equip with the modern technology. The collection of electronic resources (both offline and online) in the libraries need to be managed efficiently so as to provide specific, pinpointed, exhaustive and up-to-date information to the users. Today, the atmosphere of libraries is learning-giving and learning-taking environment. The ICT must know to handle by the librarian and user as well as library staff should know how to use ICT.



The modern library environment rapidly changed its environment to a hybrid library, where both printed and electronic documents are available. Users come to know about library holdings through Web-OPAC Service. In case of electronic resources of college libraries, user can search from their own Pc. And any other place, where network connectivity is available. The INFLIBNET has provided a consortia for govt aided college libraries ie. NLIST. Through user ID and password the bona fide members can access the thousands of e-books and e-journals.

In digital library environment, there is a tendency to send the required information to the user's desk or pc.

**CONCLUSION:** The library environment should have some ethics. It should create a welcoming, comfortable and safe environment of users. The library is a place for learning and reflection. The library staffs support these activities by providing helpful, responsive and knowledgeable service. The modern library environment creates a setting where users feel free to pursue research and study without comprising their privacy or safety. In library environment, there are many books related to various subjects, many information waiting for reader. Therefore, Francis Becon rightly says,

"Some books are to be tasted, others to be swallowed,

And some books to be chewed and digested."

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# THE EXTENT OF POVERTY IN SLUMS OF DIBRUGARH TOWN

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The term slum first appeared during the 1820s as part of the London cant. And the term was used to identify the poorest quality housing and the most unsanitary conditions, a refuge for marginal activities including crime, 'vice' and drug abuse, and a likely source for many epidemics that destroyed urban areas. A place isolated from all that was decent and wholesome.

Slums in contemporary times have included the most informal settlements that are becoming the most visible expression of urban poverty in developing world and major cities. Such settlements are described by a variety of tenure arrangements. The research group found that slum structures vary from tent settlements, the simplest huts with plants and rubbishes and asbestos, to permanent well maintained structures. Despite of that, what most slums share in common, is a lack of basic human needs, like sanitation, clean water, electricity, and other basic services

In developing countries, the word 'slum' simply refers to lower quality or informal housing and lacks the negative and divisive original connotation. In such countries the slum is a consequence of poverty and socio economic backwardness .For census of India,2001, the slum areas broadly constitute of:

"1.All specified areas in town or city notified as 'slum' by state, Union Territories (U.T) Administration Local Govt. under any Act including a (Slum Act)



2. All areas recognized as 'slum' by state, U.T Administration or Local Government, Housing and Slum Boards, which may have not been formally notified as slum under any act.

3. A compact area of at least three hundred population or about 60-70 households of poorly built congested tenements in unhygienic environment usually with inadequate infrastructure and lacking in proper sanitary and drinking water facilities.

In Dibrugarh town of Assam the existence of slum is evident from the fact that the Municipal Board has registered ten slum pockets within its periphery. The municipality had conducted the last census in the year 1996 regarding the number of households and the approximation population within the municipal area. Table -1.A shows the number of households and the population of the slum pockets under Dibrugarh municipality as recorded in 1996 census.

**Table-1.A**

**Number of households and population of slum pockets of Dibrugarh town**

| Serial number | Name of the slum pockets | Ward number | Number of households | Population approximately | Percentage of total population of the slum pockets |
|---|---|---|---|---|---|
| 1. | Gangapara | 21 | 262 | 2004 | 9.61 |
| 2. | Paltanbazar | 22 | 479 | 2874 | 13.78 |
| 3. | Grahambazar | 17 and 18 | 583 | 2110 | 10.11 |
| 4. | Pathanpotty | 4 | 295 | 1770 | 8.48 |
| 5. | Tulsi gaon | 5 | 243 | 1456 | 6.98 |
| 6. | Santipara | 12 and 13 | 350 | 2005 | 9.61 |
| 7. | Lohar potty | 9 and 10 | 266 | 2129 | 10.21 |
| 8. | Mirzabag | 8 | 330 | 2966 | 14.22 |
| 9. | Tinkunia | 17 | 160 | 960 | 4.60 |
| 10. | Dibrujan | 22 | 370 | 2588 | 12.41 |
| | Total | | 3338 | 20852 | 100 |

Source: Dibrugarh Municipal Board

In the table we find that population is highest in the Paltan bazar slum pocket.

**A quick view of the housing and sanitary conditions of the slums pockets of Dibrugarh town:** Most of the houses in the slum pockets of Dibrugarh town around (98 p.c) are built by the slum dwellers themselves. Mud, bamboo, grass and tin are used in the construction of these houses. Doors and windows are weak. The ventilation facility of the houses is poor. The water supply system is mainly served by municipal tube wells and private tubewells.During the rainy seasons the problem of water logged is very common. There is no space for recreational facilities. In these slumuseholds 20 p.c have private latrine and 80 p.c households use community latrine. People of Pathan potty slum pocket use drain and open space for refuse disposal. In all these slum Pockets of Dibrugarh town there is lack of garbage bin and proper drainage facility in all the slum pockets.

Thus it is observed that slum pockets of entire Dibrugarh town suffers from many shortages, such as a hygienic house to live, proper drainage facility system, community latrine ,proper sanitary system etc.

**Objective of the study :** The objective of the study is to observe the extent of poverty of slums of Dibrugarh town.

**Design and methodology of the study:** The methodology adopted for the study is descriptive .It is basically based on primary data collected through field investigation .Information have been collected from sample respondents .There are ten slum pockets in Dibrugarh district where 3338 households inhabited and hundred families have constituted our sample respondents. These slum areas are situated in different ward no. of Dibrugarh municipality. Therefore, special care has taken while choosing the respondent so that they can be representative of the entire slum pockets. Since it is unofficially stated that in Tulsi Gaon the essential characteristics of a slum are not available now it is excluded from our field survey . As 2 percent households are selected randomly from each slum pocket for the sample the sample size become sixty two.

**The extent of poverty in slums of Dibrugarh town:**

Poverty exists mainly in slums and poverty of lives and opportunities – or human poverty – is multi-dimensional in character and diverse rather than uniform in context. Over the years the concept of poverty has been defined in different ways. There are three perspectives on the basis of which



poverty is gauged: income perspective, basic needs perspective and capability perspective. Most of the studies on the measurement of poverty were based implicitly or explicitly on the norms defined in terms of calorie intake.

As far as studies related to poverty of slums of Dibrugarh town of Assam are concerned no comprehensive study has been undertaken by researchers yet. It is this gap in our existing knowledge that has particularly motivated the present researchers in favor of undertaking such type subject.

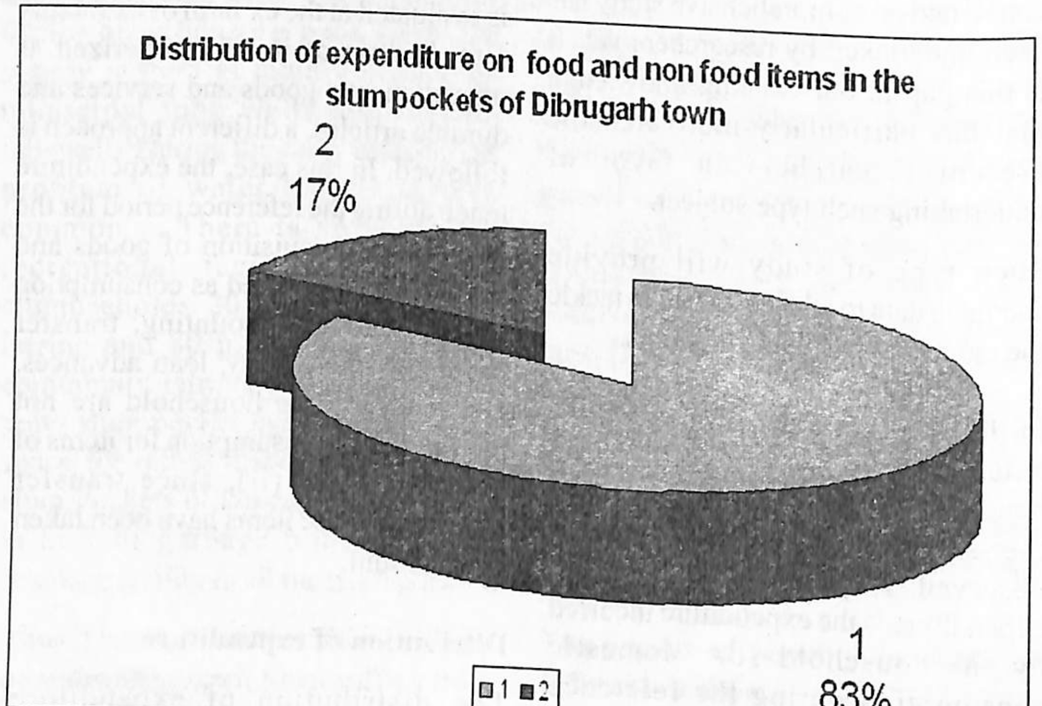
Such type of study will provide adequate data to take measures to tackle the emerging problems of slums.

In this study in order to measure the extent of poverty among the slum households the expenditure pattern of the sample slum households is observed. Household consumption expenditure is the expenditure incurred by a household on domestic consumption during the reference period. It is the total of the monetary values of consumption of various groups of items, namely food, pan (betel leaves ), tobacco, intoxicants and fuel and light, (ii) miscellaneous goods and services and durable articles . An item of clothing and foot wear would be considered to have been consumed if it is brought into maiden or first use during the reference period. The consumption may be out of (i) purchases made in cash or credit during the reference period or earlier; (ii) home growth stock; (iii) receipts in exchange of goods and services ; (iv) any other receipts like gift , charity , borrowing and (v) free collection . Home produce is evaluated at the ex farm or ex factory rate. In case of items categorized as miscellaneous goods and services and durable articles, a different approach is followed. In this case, the expenditure made during the reference period for the purchase or acquisition of goods and services is considered as consumption .To avoid double counting, transfer payments like charity, loan advances, etc. made by the household are not considered as consumption for items of groups (i) and (ii), since transfer receipts of these items have been taken into account.

**Ditribution of expenditure**

The distribution of expenditure between food and non food items reflects the economic wellbeing of the people . The lesser the expenditure on food, the higher are the surplus available for consumption on items that raise living standards like education, health and other services. In the national scenario for the urban areas share of consumption expenditure on food is 42.5 percent for the year 2004-05 and for Assam(urban)it is 49.5 percent for the same period. On the other hand for the sample slum households the share of expenditure on food item is 83 percent for the year 2010. This distribution of expenditure of the sample households on food and non food items is shown with the help of figure 1.B.

**Figure 1.B**




From the field survey it is found that this situation of higher expenditure on food items occurs because of the low level of income of the slum households. Their income permits them only to meet their basic requirements. In such a situation they can not allocate their spending on all those non food items which will raise their standard of living. And hence they are always trapped in poverty.



**Average monthly per capita consumption expenditure :**

Average monthly per capita consumption expenditure is an important variable of determining the below poverty line. On the basis of this the National Sample Survey in its 61st round determine the below poverty line for states of India. In order to observe the average monthly per capita consumption expenditure situation of the sample slum households following formula is followed:

Aggregate of total expenditure of the all the sample slum households

Aggregate of all the sample households size.

Therefore the average monthly per capita consumption expenditure of slum pockets of Dibrugarh town is Rs. 570.16. This amount of average monthly consumption expenditure is found to be more than two times low when it is compared with Dibrugarh (urban) district, which is the best among all the districts of Assam (urban) in this regard.For Dibrugarh district the average monthly per capita consumption expenditure is stand at Rs.1608 for the year 2004-05.This situation of slum households simply indicates their economic backwardness in the district Dibrugah.

**Conclusion**

The overall analysis of extent of poverty of slum dwellers of Dibrugarh town reveals a gloomy picture of their economic situation. Therefore there is an urgent need to solve the problem of poverty of slum dwellers as soon as possible.

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# WATER POLLUTION: IMPACT ON FISH POPULATION

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It was a common scene not more than 35 to 40 years from now in rural Assam, surrounded by plenty of stagnant and running water bodies, inhibited by countless number of tiny fishes and other aquatic tiny creatures. Some of those were so attractive in shape and body colouration that those were the point of attraction of the village people. It was a spontaneous practice of preservation not to kill the fingerling and juvenile sized fishes; instead the germplasms were preserved till attaining maturity. The result was high productivity and plenty of fishes all around in water bodies. It is true that the fishermen find fishing as their only source of earnings. The things have changed over the years, forgetting the ethics of preservation! It is somewhat alarming to find that fishes are not only over exploited from their habitat but also their germplasms are being destroyed gradually.

Fishes not only provide proteins but they are protector of general health of the people living nearby wet lands. The indigenous tiny fishes are mostly larvae eater, thereby, prevent mosquitoes to breed randomly. The village people are increasingly exposed to the mosquito borne diseases like Malaria, Japanese Encephalitis, Dengu, Filaria etc. Those diseases are becoming epidemic and people's sufferings are increasing day by day. This is one example of the benefits, the tiny fishes carry.

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There is another factor of benefit, the people can find in fishes is their beautiful body colouration to term them in modern times, the '*Ornamental Fishes*' or '*Aquarium Fishes*'. Presently, it is a common feature to be seen in many public places where aquariums occupy the corners of our homes, restaurants, airports, dining halls, hotels, cinema halls and other business establishments. It is not true to say that only the colourful species are reared in aquariums but there are certain ugly bizarre species having ghost like appearance like Bang fish, Kola singara etc. are reared in such aquariums. Export of aquarium fishes now a day's become a lucrative business. Breeding, fish rearing and germplasm preservation and ancillary of aquarium manufacturing and fish food production becomes a fast growing industry in our country.

The North Eastern states of India contribute a significant role in the ornamental fish market with its share rose to about 85% of the total market production; mostly nurtured by the entrepreneurs of outside NE region but there is scope of strengthening this sector through larger involvement of local people. Some of the commercially important ornamental species found are:

*Channa striata, Channa marulius, Ailia coila, Ailia punctata, Anabas testudineus, Clarias batracus Channa gachua, Channa punctata, Chaca chaca, Glossogobius giuris, Heteropneustes fossilis, Hara hara Badis badis, Rasbora rasbora, Acanthocobitis botia, Botia histrionica, B. berdmorei, B. derio Colisa fasciatus, C. lalia, C. sota, Amblypharyngodon mola, Mystus cavasius, Monopterus cuchia, Nandus nandus, Ompok bimaculatus, Puntius sarana, Xenentodon cancila, Chela laubuca, Chela cachius, Devario devario, Danio rario. Esomus danricus, Gadusia chapra, Mystus tengara, Mystus bleekeri, Mystus vittatus, Macrognathus aculeatus, Macrognathus pancalus, Osteobrama cotio, Puntius sophore, Puntius ticto, Puntius phutunio, Puntius gelius, Parambassis ranga, Rasbora deniconius, Trichogaster fasciatus, Tetraodon cutcutia etc.*

Due to wanton exploitation and due to pollution of water bodies by various means, many of those fishes found plenty in numbers earlier are no longer seen in plenty; rather these fishes are now at the verge of extinction. The sole responsibility goes to the inhuman activities of the people as mass destruction of the living habitat being poisoned by pouring or spraying lethal chemicals like DDT, endrin, dieldrin and some plant based poisons in water bodies for killing and catching fishes for cheaper earnings. Some chemicals are mostly non-biodegradable pollutants and are often biologically magnified. The non-biodegradable pollutants also combine with other compounds in the environment to produce additional toxins. It is a common scene during winter season that the people use lethal chemicals in river water to kill fishes. Needless to say that the tea gardens and paddy fields use chemicals for pest control and the fertilizers used by cultivators, has greatly affected the fish population. There are other senseless human activities causing mass destruction of the dwelling and breeding centers of fish fauna! It is true that human being are the creator of science as well as propagator of scientific reasoning but at the same time many of their uncivilized activities made them to '*Destructors*' instead of '*Saviours*'!

There is a scope of believing the fact that uncontrolled immigration and population explosion, rapid urbanization, manmade pollution and green revolution etc. are the main reasons for mass destruction of the habitat where these tiny creatures (fishes) live. It is of much concern to the urban population of Dibrugarh Town unlike many other medium and small towns and even metropolis like Guwahati, where poor drainage and unplanned growth of human settlements cause not only shrinkage but create pollution to the water bodies. There are sewage systems in all urban areas of Assam, delivering polluted water to the relatively clean water bodies like river systems.

The residents of Dibrugarh are concerned about the ill effect of the polluted water flowing through the Dibrugarh Town Protection (DTP) Drain along its course. Polluted water not only spreads its foul odour in its course but also it is the effective breeding ground for mosquitoes. It affects the fish fauna living in the polluted water of the drain. A study on the physico-chemical changes of the water brought about certain alarming features that have direct or indirect effect on the histo-pathology of fish species living there. The situation aggravates further as the health hazard likely to bear by the poor people living nearby, catching and consuming fishes or collecting contaminated water from the shallow tube wells or dug wells attached to the course of the drain. Polluted water of the drain provides adequate room for breeding mosquitoes, the classic vectors of diseases like *malaria, dengue, encephalitis* and a species of snail known to host a parasitic flatworm, causes *schistosomiasis disease.*

The study further revealed that the water quality of the drain was not conforming to the prescribed 'World Health Organization' (WHO) standard for waste water quality. The water was either acidic or alkaline and not much favourable for biological productivity. The biological productivity is dependent on water colour; the black colour stalls as a direct threat to the life of aquatic organisms and human health besides spreading foul odour as it generates hydrogen sulphide ($H_2S$) gas due to the activity of anaerobic microorganisms. There are other factors too such as turbidity of water, water temperature, Total Dissolved Solids (TDS) in water, Dissolved Oxygen (DO) and Dissolved Carbon dioxide ($CO_2$) etc. that has direct or indirect control of the fish production, especially on their migration. It is perhaps appropriate to note that deterioration of water quality of the sewage system is a gradual phenomenon not seen at least four decades ago. At that time, there was countless number of *puntius, Kholisa* species and other indigenous fishes swimming through the flowing water of the municipal drain, especially during rainy season, delighting the young minds but the situation is different today!

There is a necessity of creation of a baseline monitoring systems of our sewage system. The ability to evaluate the success (or failure) of management schemes must rely on data that track a system's response to management. Ironically, no clearance or improvement of any nature has been undertaken along the stretch of the Dibrugarh Town Protection (DTP) drain. The drain at market place becomes a dumping ground of garbage; in other places, luxuriant growth of water hyacinth and huge pile of silt are seen. The district administration has failed to compel the concerned department entrusted the job of its maintenance. Even during the long dry months of winter, the drain is found half filled with vegetative growth in places, thereby creating a very unhygienic environment.

There are similar such drains/ nalas in every urban areas of Assam and rest of the country, discharging their highly pollutant effluents to the major rivers or lakes or stagnant water bodies. It is sad to note that our planners, environmentalists are least bothered about the ill effect of similar sewage systems. There is the need to undertake



regular cleaning/restoration operations to make the sewage water bodies fit for discharging their effluents into the river or other water bodies.

The civilian should become effective savior to the environment and its living jewels, instead, realizing the importance of the ecosystem and its living components including highly priced tiny fishes. Therefore, every responsible citizen must realize that they are not only polluting the surroundings but also damaging the future of their successors. Everybody must think about our next generations so that they can inherit a clean environment from us.

Lastly, each country men should be aware of the hidden benefits fishes provide apart from other benefits. Firstly, the tiny creatures, some of which are branded as '*Aquarium Fishes*', can fetch good revenues through their export as there is a great demand of 'Ornamental Fishes' in many European countries and USA. Hence, one should feel proud that nature has given plenty of resources! But people are foolishly utilizing those resources. There should be awareness campaign amongst rural and urban masses so that everyone realizes the importance of these tiny creatures. It is true that these God gifted creatures not only carry aesthetic beauties but also they are friendly to the human beings. Therefore, water bodies must be kept clean as in the past, leaving some room to its living organisms like the tiny fishes, called, '*Living Jewels*' in order to save people and transforming the future to become safe and healthy.

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# বিপন্ন বিশ্ব পৰিৱেশ আৰু প্ৰাকৃতিক প্ৰত্যাখ্যান

চন্দ্ৰগুপ্ত বৰা
সহযোগী অধ্যাপক, প্ৰাণী বিজ্ঞান বিভাগ
ৰূপজ্যোতি বৰা
সহযোগী অধ্যাপক, উদ্ভিদ বিজ্ঞান বিভাগ

বিংশ শতিকাৰ শেষৰ তিনিটা দশকৰ পৰা পৰিৱেশজনিত শংকাই মানুহৰ মনত অতি গভীৰ ভাবে খিতাপি লৈছে। স্বাভাৱিক অৰ্থত বিশ্বৰ সমগ্ৰ জীৱকুল প্ৰকৃতিৰ একো একোবিধ কাৰ্যকৰি অংগ হোৱাৰ হেতুকে বিশ্ব পৰিৱেশ এক সন্তোলিত গতিত বৰ্তি থাকে। জীৱকুলৰ প্ৰতিটো কাৰ্যকৰি উপাংগৰ চাৰিওপিনে, (উলম্ব আৰু পাৰ্শ্বীয় দিশ) নিৰৱচ্ছিন্ন ভাৱে অনুভূত আৰু উপকৃত হৈ থকা আধাৰ আৰু স্থিতিকে পৰিৱেশ বুলি ক'ব পাৰি। পৰিৱেশৰ এই সাধাৰণ ধাৰণাটো বিজ্ঞানসন্মত ভাবে এনেকৈও ক'ব পাৰি— পৰিৱেশত সজীৱ আৰু নিৰ্জীৱ (Biotic & abiotic) ভাবে দুটা কাৰক বা উপাংশ (component) থাকে। সৌৰশক্তি হ'ল পৰিৱেশৰ প্ৰধান চালিকা শক্তি আৰু পৰিৱেশৰ বল। সৌৰশক্তিসহ এই উপাংশবোৰে নিজস্বভাৱে পৰিৱেশৰ সামগ্ৰিক প্ৰক্ৰিয়াবোৰ এক সন্তোলিত ৰূপত বৰ্তাই ৰাখিবলৈ যত্নপৰ হয়। প্ৰকৃতিৰ সন্তোলিত ৰূপটো সৰ্বমংগলময়। কিন্তু, অতি ঠুনুকা। সীমাৰ পাৰাপাৰ ভাঙি প্ৰকৃতিৰ এই স্বাভাৱিক স্থিতি অতিক্ৰমি গৈ কোনো জীৱ অনন্তকালৰ বাবে নিৰাপদ হৈ থাকিব নোৱাৰে।

**সুখাভিলাষী মানৱ কৰ্ম আৰু প্ৰাকৃতিক প্ৰক্ৰিয়া ঃ**

এক বিংশ শতিকাৰ প্ৰাৰম্ভণিৰ পৰাই বিশ্বায়ন যুগৰ সূচনা হ'ল। বিশ্ববাসী যেন সুখ-সম্পদ আহৰণ, ভোগ-বিলাস আৰু লাভালাভৰ প্ৰতিযোগিতাতহে নামি পৰিল। গতিকে বিশ্বৰ চুকে-কোণে থকা প্ৰাকৃতিক সম্পদৰ অবাধ লুণ্ঠনৰ মানসিকতা এটা মানুহৰ মাজত ক'ব নোৱাৰাকৈয়ে গঢ় লৈ উঠিল। প্ৰাকৃতিক পৰিৱেশত প্ৰাণীকুলৰ মাজত 'লুণ্ঠন প্ৰকৃতি' এক সহজাত প্ৰবৃত্তি। কিয়নো, এটা প্ৰাণীয়ে অন্য এটাক অথবা উদ্ভিদ সমস্তক ভক্ষণ কৰি নিজে বাচি থকাটো স্বাভাৱিক বিধিসন্মত প্ৰাকৃতিক প্ৰক্ৰিয়া। এনে প্ৰক্ৰিয়াই আওপকীয়াকৈ প্ৰকৃতিজগতখন সন্তোলিত আৰু সুষম কৰি ৰাখে। ইয়াৰ বিপৰীতে সমগ্ৰ মানৱ জাতিয়ে কৰা সীমাহীন প্ৰাকৃতিক লুণ্ঠন দৰাচলতে অপ্ৰাকৃতিক অপকৰ্ম। এনে অপকৰ্মই প্ৰকৃতিৰ সন্তোলিত ৰূপ বিনষ্ট কৰিছে। প্ৰকৃতিৰ নিৰ্জীৱ আৰু সজীৱ উপাংশবোৰৰ স্থিতি কি হ'ব ভাবিবলৈ মানুহৰ আহৰি নাই। সুখাভিলাষী প্ৰতিযোগিতাৰ দৌৰে মানুহক শ্ৰেষ্ঠৰ পৰা শ্ৰেষ্ঠতম কৰি গঢ় দিলেও, ক্ৰমাগতভাৱে মানৱজাতি 'প্ৰাকৃতিক প্ৰত্যাখ্যান' (Natural rejection) ৰ চক্ৰবেহুৰ মাজত সোমাই পৰিছে। মানুহৰ অদূৰদৰ্শীতা আৰু কেৱল নিজস্বাৰ্থ বিজড়িত কৃত-কৰ্মই প্ৰাকৃতিক প্ৰত্যাখ্যানৰ মূল কাৰণ। বিশ্বায়নৰ ব্যস্ত কৰ্মৰাজীৰে ভাৰাক্ৰান্ত আৰু প্ৰতিযোগিতাৰ গুৰুভাৰত দিকশূন্য মানৱ জাতি প্ৰকৃতি সুৰক্ষাৰ নিমিত্তে যিমানেই উঠি পৰি নালাগক কিয়, বিশ্ব পৰিৱেশ সুস্থ হৈ থাকিবনে? তাৰ নিশ্চয়তা আজিকোপতি সন্দেহৰ আৱৰ্তত।

**সহনশীলতা, বিপন্নতা আৰু প্ৰাকৃতিক প্ৰত্যাখ্যান ঃ**

কুৰি শতিকাৰ ২য় দশকৰ আৰম্ভণিতে V.E. Shelford নামৰ এজন বিজ্ঞানীয়ে এক তথ্য আগবঢ়াই কৈছিল যে সকলোবোৰ প্ৰাকৃতিক কাৰক আৰু পৰিঘটনাৰ বিপৰীতে জীৱসমগ্ৰৰ এক সৰ্বনিম্ন আৰু সৰ্বোচ্চ সহনশীল পৰিসীমা আছে। এই পৰিসীমাৰ জীৱবোৰৰ মধ্যৱৰ্তী অংশত অৱস্থান কৰাবোৰ সক্ৰিয় আৰু সুস্বাস্থ্যৰ। কিন্তু, এই অংশৰ দুইকাষে উচ্চ আৰু নিম্ন সীমাৰ পৰিৱেশিক কাৰকৰ ওপৰত নিৰ্ভৰশীল জীৱবোৰ ৰুগ্ন স্বাস্থ্যৰ আৰু প্ৰচণ্ড প্ৰাকৃতিক চাপৰ মাজত কষ্ট সহকাৰে বৰ্তি থাকে। ইয়াক কোৱা হয় পৰিৱেশিক চাপসীমা (Environmental limit of stress)। পৰিৱেশিক চাপৰ কবলত পৰা জীৱবোৰৰ জীৱন সীমিত নিৰাপত্তা (marginal safety)ৰ আৱৰ্তত। সহনশীলতাৰ এই পৰিসীমা (limit of tolerance) চেৰাই গ'লে জীৱৰ নিৰ্ঘাট মৃত্যু। ইয়াকে কোৱা হয়, প্ৰাকৃতিক প্ৰত্যাখ্যান (Natural rejection)। তেতিয়া উদ্ভিদকুলৰ মৃত্যু হয়, কিন্তু, প্ৰাণীবিলাক আৰশ্যম্ভাৱী মৃত্যুভয় আৰু নিৰাপত্তাৰ তাগিদাত তাৰপৰা ক'ৰবালৈ আঁতৰি যায়। এয়াই হ'ল প্ৰব্ৰজন পৰিক্ৰমা। প্ৰাণীভেদে প্ৰব্ৰজন পৰিক্ৰমা বেলেগ বেলেগ আৰু ই কিছুমান প্ৰাণীক জীৱন ৰক্ষাৰ এক নতুন মাত্ৰা প্ৰদান কৰে। প্ৰাকৃতিক প্ৰতিকূলতাৰ প্ৰবল চাপ সহিব নোৱাৰা জীৱক প্ৰকৃতিয়ে কাহানিও আদৰি লোৱা নাই আৰু সিহঁতৰ বিলুপ্তি ঘটিছে চিৰদিনলৈ। সাম্প্ৰতিক কালত এই একেই ঘটনা ঘটিছে মানৱকূলৰ মাজত। সমগ্ৰ বিশ্বৰ পৰিৱেশ বিভিন্ন প্ৰকাৰে লুণ্ঠিত হোৱাৰ অন্তত মানৱ আৰু প্ৰকৃতিৰ মাজত সংঘাত আৰু দুৰত্ব বাঢ়ি গৈ আছে। অনিয়মিত অতিবৃষ্টি-অনাবৃষ্টি, চুনামী, বানপানী, গোলকীয় উত্তাপ বৃদ্ধি, মেৰু অঞ্চলৰ হিমগলন, অ'জন স্তৰৰ বিনষ্টীকৰণ, জলবায়ুৰ পৰিৱৰ্তন, তেজস্ক্ৰিয় বিকিৰণ আদি অন্তহীন হানিকাৰক পৰিঘটনাৰে ভাৰাক্ৰান্ত আৰু বিতুষ্ট বিশ্বপ্ৰকৃতি। ইয়াৰ সমান্তৰালকৈ সৃষ্টি হৈছে ৰাজনৈতিক, সামাজিক আৰু অৰ্থনৈতিক হেঁচা। প্ৰকৃতিক উপেক্ষা কৰি এনে হেঁচা আৰু চাপৰ মাজত অহৰহ জীৱন আৰু প্ৰকৃতিৰ টনা-আঁজোৰা। সমগ্ৰ মানৱ জাতি আৰু বিশ্বপ্ৰকৃতিৰ ভৱিষ্যত এনেকৈয়ে এতিয়া অনিশ্চয়তাৰ গহ্বৰত সোমাই পৰিল।

**বিশ্ব পৰিৱেশ দিৱস' ২০১৪ ৰ সকিয়নি ঃ**

চলিত ২০১৪ বৰ্ষৰ বিশ্বপৰিৱেশ দিৱসৰ মূল বিষয়বস্তুৰ ওপৰত আধাৰিত এটি শ্ল'গান আছিল— "Raise your voice, not the sea level."

অৰ্থাৎ, 'সমুদ্ৰপৃষ্ঠৰ উচ্চতা বৃদ্ধিত অৰিহনা যোগোৱাতকৈ প্ৰবল জনমতেৰে আৰু উচ্চস্বৰে বিশ্ববাসীয়ে তাৰ প্ৰতিবাদ কৰক।' সদ্যহতে বিশ্বৰ এক অগ্ৰণী পৰীক্ষণ কেন্দ্ৰ Gravity recovery and climate experiment, চমুকৈ GRACE ৰ ২০১৩ চনৰ ১৫ জুলাইত আগবঢ়োৱা কৃত্ৰিম উপগ্ৰহ ভিত্তিক এক সমীক্ষাত কোৱা হৈছে যে কেৱল এণ্টাৰ্কটিকা আৰু গ্ৰীণলেণ্ডৰ গ্লেচিয়াৰবোৰতেই প্ৰতি বছৰে ৩০০ নিযুত টন বৰফ গলি অন্ত হৈছে আৰু নাটকীয়ভাৱে সাগৰপৃষ্ঠৰ উচ্চতা বাঢ়ি গৈ আছে। গোলকীয় উত্তাপ বৃদ্ধিৰ ফলত মেৰু অঞ্চল, বিশেষকৈ এণ্টাৰ্কটিকাৰ পশ্চিমাংশই মুঠ ১,৩৪,০০০ নিযুত টন বৰফ ইতিমধ্যে হেৰুৱাব লগা হৈছে। তদুপৰি, বৃটেইনৰ ৰাষ্ট্ৰীয় সামুদ্ৰিক আৰু বায়ুমণ্ডলীয় প্ৰশাসন (National Oceanic & Atmospheric Administration) এ ২০০০ চনৰ পৰা ২০১৫ চনৰ এই সময়চোৱাক বিশ্বৰ সৰ্বাধিক উত্তাপবৃদ্ধিৰ কাল বুলি তথ্য আগবঢ়াইছে। ইয়াৰ ফলত এতিয়ালৈকে সমুদ্ৰপৃষ্ঠৰ উচ্চতা ৭ইঞ্চি বৃদ্ধি পাইছে। গোলকীয় উষ্ণতা বৃদ্ধি এনেদৰে অটুত থাকিলে অহা দশকটোত সমুদ্ৰপৃষ্ঠৰ উচ্চতা আৰু ১৮ ইঞ্চি বৃদ্ধি পোৱাটো নিশ্চিত হ'ব। বিশ্ববাসী এনে এক সম্ভাব্য শোচনীয় পৰিস্থিতিত পৰাৰ পটভূমিত চলিত ২০১৪ বৰ্ষৰ বিশ্বপৰিৱেশ দিৱসত বিশ্ববাসীৰ প্ৰতি সন্মিলিত ৰাষ্ট্ৰসংঘই এটাই আকুল আহ্বান জনাইছে—'বিশ্ববাসীয়ে সাগৰপৃষ্ঠৰ সলনি প্ৰবল প্ৰতিবাদ আৰু জনমত বৃদ্ধি কৰক, যাতে এইটো ইমানতে ৰোধ কৰাত সহায়ক হয়। প্ৰকৃতি, জীৱন আৰু সম্পত্তি সুৰক্ষাৰ নিমিত্তে এই শ্ল'গানে এক বিপ্লৱৰ সূচনা কৰাটো সকলোৰে কাম্য।

**বিশ্বৰ প্ৰাকৃতিক প্ৰত্যাখ্যানৰ প্ৰথম অভিলেখ কাৰ্টাৰেট দ্বীপ (Carteret Islands) আৰু পৰিৱেশ শৰণাৰ্থীৰ সৃষ্টি ঃ**

কাৰ্টাৰেট (Carteret) হ'ল ছয়-সাতটা সৰু সৰু দ্বীপ লগলাগি সৃষ্টি হোৱা প্ৰশান্ত মহাসাগৰীয় দ্বীপপুঞ্জ। বৃটিছ নাৱিক ফিলিপ কাৰ্টাৰেটে ইয়াক আৱিষ্কাৰ কৰে কাৰণে এই নামকৰণ কৰা হৈছে। সাগৰপৃষ্ঠৰ পৰা ইয়াৰ উচ্চতা মাত্ৰ ১.৫ মিটাৰ হোৱা হেতুকে সমুদ্ৰৰ লুণীয়া পানীয়ে ইয়াক প্লাবিত কৰে। অষ্ট্ৰেলিয়াৰ নেশ্যনেল টাইড ফেচিলিটিৰ অধিকৰ্তাই কাৰ্টাৰেটৰ এই অঞ্চলত বছৰি ৮.২ মিলিমিটাৰকৈ সমুদ্ৰপৃষ্ঠ বাঢ়ি গৈ আছে বুলি নিশ্চিত কৰিছে। গোলকীয় উত্তাপ বৃদ্ধি আৰু গোলকীয় জলবায়ু পৰিৱৰ্তন (Global climate change) ইয়াৰ মূল কাৰণ। বিগত শতিকাৰ শেষৰ বছৰ কেইটাৰ পৰাই এই উন্নয়নশীল ক্ষুদ্ৰ দ্বীপমালাৰ বাসিন্দাসকলৰ জীৱন-নিৰ্বাহ কঠিন হৈ আহিল। সাগৰৰ প্ৰবল ঢৌৱে উটুৱাই নিলে কাৰ্টাৰেট বাসীৰ বাসস্থান আৰু কৃষিভূমি। সমুদ্ৰৰ লুণীয়া পানীয়ে অনুৰ্বৰ কৰা কৃষিভূমি মৰুভূমিলৈ ৰূপান্তৰ হ'ল। তেওঁলোকৰ জীৱনলৈ ক্ৰমে চৰম বিপৰ্যয় নামি আহিল। সৌ সিদিনা ২০১৩ চনত কাৰ্টাৰেট বাসীয়ে আৰম্ভ কৰে নিৰাপদ আশ্ৰয়ৰ সন্ধান। ভগ্ন হৃদয়েৰে চকুলো টুকি দলে বলে তেওঁলোক ওলাই আহিল। এতিয়ালৈকে ২০০০ জন কাৰ্টাৰেটবাসীয়ে স্থাৱৰ-অস্থাৱৰ সম্পত্তিৰ মোহ এৰি পো-পৰিয়াল সহ কাৰ্টাৰেটক জনালে চিৰবিদায়। সেইস্থানৰ মৃত্যুমুখী প্ৰাকৃতিক পৰিৱেশে এইসকল লোকক স্থানচ্যুত হ'বলৈ বাধ্য কৰালে। এই পৰিঘটনাক একপ্ৰকাৰ প্ৰাকৃতিক প্ৰত্যাখ্যান বুলি ক'ব পাৰি। কিয়নো, বিশ্বৰ মানচিত্ৰৰ পৰা কাৰ্টাৰেট দ্বীপ



চিৰদিনলৈ হেৰাই যোৱাটো একেবাৰে খাটাং। ২০১৫ চনৰ ভিতৰতেই এই সুনীল সমুদ্ৰৰ মাজত থকা সেউজ কাৰ্টাৰেট মহাসাগৰত বিলীন হৈ যাব বুলি সন্মিলিত ৰাষ্ট্ৰসংঘই মানি লৈছে। সৰ্বহাৰা আৰু ভগনীয়া এই কাৰ্টাৰেটবাসীসকলক ৰাষ্ট্ৰসংঘই সদ্যহতে 'পৰিৱেশজনিত শৰণাৰ্থী' (Ecological refugee) বুলি অভিহিত কৰিছে। বিশ্বত এওঁলোকেই হ'ল প্ৰথম প্ৰাকৃতিকভাৱে প্ৰত্যাখ্যিত আৰু চৰকাৰীভাৱে স্বীকৃত পৰিৱেশ-শৰণাৰ্থী আৰু জীৱশ্ৰেষ্ঠ মানৱ। ১৯৮০ চনৰ পৰাই কাৰ্টাৰেটৰ এই শৰণাৰ্থীসকলক প্ৰশান্ত মহাসাগৰীয় অন্য এটা দ্বীপ ব'গেন ভিলি (Bougainville) লৈ স্থানান্তৰ কৰি তাত পুনৰ সংস্থাপন দিব লগা হৈছে।

**বিশ্ববাসীৰ শংকা আৰু প্ৰত্যাশা ঃ**

কাৰ্টাৰেট দ্বীপৰ এই পৰিণতিয়ে সমগ্ৰ বিশ্ববাসীৰ প্ৰতি এক প্ৰত্যাহ্বানৰ সৃষ্টি কৰিলে। বিশ্ব প্ৰকৃতিয়ে এনেকৈয়ে হয়তো এফালৰ পৰা লাহে লাহে বিশ্বৰ সমস্ত জীৱকুল দুৰ্যোগেৰে মষিমূৰ কৰাৰ নীৰৱ কছৰৎ আৰম্ভ কৰি যাব। প্ৰকৃতিৰ সুষম স্থিতি মানৱ কৰ্মৰ দ্বাৰা যিমানেই বিঘ্নিত হ'ব, সিমানেই প্ৰাকৃতিক প্ৰতিবদ্ধকতাৰ সৃষ্টি হ'ব। মানৱকৃত কৰ্মৰ দ্বাৰা সমগ্ৰ বিশ্বতে আজি পৰিৱেশিক কাৰ্বন, উষ্ণতা, অ'জন, তেজস্ক্ৰিয় ৰশ্মি আদি অজীৱ কাৰকৰ মাত্ৰা বৃদ্ধি পাই গৈ আছে। উন্নত আৰু উন্নয়নশীল দেশৰ বৈপ্লৱিক কাৰিকৰী প্ৰগতিৰ লগতে অবাধ প্ৰাকৃতিক সম্পদ আহৰণ আৰু তাৰ অনিয়ন্ত্ৰিত ব্যৱহাৰেই ইয়াৰ বাবে দায়ী। ইয়াৰ ফলত গোলকীয় জলবায়ুৰ পৰিৱৰ্তন ঘটি প্ৰাকৃতিক দুৰ্যোগ আৰু দুৰ্ভোগ হৈছে। নভোমণ্ডললৈ কাৰ্বন নিৰ্গমন আৰু গোলকীয় জলবায়ু পৰিৱৰ্তনৰ ফলপ্ৰসূ নিয়ন্ত্ৰণৰ হকে আৰ্ন্তজাতিক সহমতক লৈ ৰাজনীতি হৈছে। জোৰ যাৰ মুলুক তাৰ আৰ্হিত ধনী আৰু উন্নত ৰাষ্ট্ৰই উন্নয়নশীল আৰু অনুন্নত ৰাষ্ট্ৰসমূহৰ ওপৰত বায়ুমণ্ডলীয় কাৰ্বন বৃদ্ধিৰ সমস্ত বোজা জাপি দি সকলো দায়-দোষৰ পৰা মুক্ত হ'ব বিচাৰিছে। সঁচা অৰ্থত ক'বলৈ গ'লে সাম্প্ৰতিক কালৰ বিশ্ববাসী আশ্বস্ত হ'ব পৰাকৈ বিপন্ন বিশ্বপৰিৱেশ উদ্ধাৰ হোৱাৰ কোনো সূত্ৰই নাই। তথাপি, বিশ্বৰ এমুঠি সৎ আৰু সচেতন অগ্ৰণী পৰিৱেশ সংগঠনৰ চিন্তা-চেতনা আৰু উদ্যোগী প্ৰচেষ্টাৰ আধাৰত প্ৰতিজনলোকৰ হৃদয়ত নতুনকৈ পৰিৱেশ সচেতনতা জাগ্ৰত হওঁক আৰু বিশ্ব পৰিৱেশ সুস্থ হৈ উঠক।

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# জীৱ বৈচিত্ৰ্য আৰু ইয়াৰ সংৰক্ষণত বহনক্ষম উন্নয়ন

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**জীৱ বৈচিত্ৰ্যৰ অৰ্থ ঃ**

জীৱ বৈচিত্ৰ্য শব্দটোৰ অৰ্থ হৈছে জীৱসমূহৰ মাজত দেখা পোৱা বিভিন্নতা বা বিচিত্ৰ্যতা। জীৱৰ বিভিন্নৰূপ, পৰিস্থিতি তন্ত্ৰত ইয়াৰ বিভিন্ন ভূমিকা, প্ৰজাতিৰ মাজত জিনৰ বিভিন্নতা, একো একোটা সম্প্ৰদায়ৰ মাজত প্ৰজাতিৰ বিভিন্নতা, পৰিৱেশ তন্ত্ৰত সম্প্ৰদায় নতুবা জীৱ প্ৰজাতিৰ বিভিন্নতা আদি বিষয়সমূহ ইয়াত সাঙুৰি লোৱা হয়। জীৱ-বৈচিত্ৰ্যই অৰণ্যত নতুবা প্ৰাকৃতিক ভাৱে বাস কৰা জীৱসমূহৰ উপৰিও আমি ঘৰচীয়া কৰা বিভিন্ন প্ৰাণী প্ৰজাতি, উদ্ভিদ প্ৰজাতি, পৰীক্ষাগাৰত কৰ্ষণ কৰা অনুজীৱ, ভেঁকুৰ আদিকো সাঙুৰি লয়।

আমাৰ জীৱমণ্ডলত কিমান জীৱ আছে তাৰ সঠিক হিচাপ আজি পৰ্য্যন্ত আমাৰ হাতত নাই। বিজ্ঞানীসকলে অনুমান কৰা মতে পৃথিৱীত প্ৰায় ১০০ নিযুত জীৱ আছে। তাৰে ভিতৰত এতিয়ালৈকে জীৱ বিজ্ঞানীসকলে ১.৭ নিযুত প্ৰজাতি প্ৰণালীবদ্ধভাৱে তালিকাভুক্ত কৰিছে। ইতিমধ্যে বহুতো জীৱ চিনাক্তকৰণ নোহোৱাকৈয়ে পৃথিৱীৰ পৰা বিলুপ্ত হৈ গৈছে আৰু আন বহুতো বিলুপ্ত হোৱাৰ পথত। বিশ্ব গৱেষণা প্ৰতিষ্ঠানে নতুনকৈ আগবঢ়োৱা এক তথ্য মতে এতিয়ালৈকে আৱিষ্কৃত উদ্ভিদ প্ৰজাতিৰ সংখ্যা প্ৰায় ৪৫০.০০০ বিধ তাৰে প্ৰায় ৩,০০,০০০ বিধ সপুষ্পক আৰু ১৫০.০০০ বিধ অপুষ্পক উদ্ভিদ। স্তন্যপ্ৰায়ী প্ৰাণীৰ সংখ্যা প্ৰায় ৪০০০ বিধ, পক্ষীৰ প্ৰজাতি প্ৰায় ৯০০০ বিধ, সৰীসৃপৰ সংখ্যা প্ৰায় ৫০০০ বিধ, উভচৰৰ সংখ্যা ৩০০০ বিধ, মাছৰ প্ৰজাতিৰ সংখ্যা প্ৰায় ২১০০০ বিধ। এতিয়ালৈকে অমেৰুদণ্ডী প্ৰাণীৰ সংখ্যা প্ৰায় ১৩,০০,০০০ বিধ। ইয়াৰ ভিতৰত পতংগৰ সংখ্যা আটাইতকৈ বেছি।

**জীৱ বৈচিত্ৰ্যৰ প্ৰকাৰ বা উপাদান ঃ** জীৱ জগতত জীৱ বৈচিত্ৰ্যতা তলত উল্লেখ কৰা প্ৰকাৰ বা উপাদানসমূহৰ ৰূপত দেখিবলৈ পোৱা যায়—

১। জিনগত বা আনুবংশিক বৈচিত্ৰ্যতা (Genetic diversity)
২। প্ৰজাতিৰ বৈচিত্ৰ্যতা (Species diversity)
৩। পৰিস্থিতি তন্ত্ৰৰ বৈচিত্ৰ্যতা (Ecosystem diversity)

১। **জিনগত বা আনুবংশিক বৈচিত্ৰ্যতা** (Genetic diversity) ঃ জিন হৈছে বংশগতি চৰিত্ৰৰ বাহক। এটা জীৱৰ চৰিত্ৰসমূহ প্ৰধানকৈ জিনে নিৰ্দ্ধাৰণ কৰে। জিন সমূহ ডি. এন. এ (DNA)ৰ দ্বাৰা গঠিত। এই জিনসমূহৰ ৰাসায়নিক গঠনৰ ভিন্নতাই একে প্ৰজাতিৰ মাজত বৈচিত্ৰ্যতাৰ সৃষ্টি কৰে। গতিকে এটা প্ৰজাতিৰ বিভিন্ন জীৱৰ জিনৰ ভিন্নতাৰ বাবে সৃষ্টি হোৱা বৈচিত্ৰ্যতাক জিনগত বা আনুবংশিক বিচিত্ৰতা বোলে।

উদাহৰণস্বৰূপে ভাৰতবৰ্ষত জিনগত বৈচিত্ৰ্যতা থকা ৫০.০০০ ধানৰ প্ৰজাতি, ১০০০ বিভিন্ন প্ৰকাৰৰ আম পোৱা যায়।

২। **প্ৰজাতিৰ বৈচিত্ৰ্যতা ঃ** প্ৰজাতি হৈছে এনে কেতবোৰ জীৱৰ সমষ্টি যিবোৰে নিজৰ ভিতৰত পুনৰ প্ৰজননক্ষম অনুৰূপ জীৱৰ জন্ম দিব পাৰে। পৃথিৱীত কিমান বিধ প্ৰজাতি আছে এতিয়াও সঠিকভাৱে কব পৰা নাযায়। এটা পৰিস্থিতি তন্ত্ৰত প্ৰজাতিৰ বিভিন্নতা সদায় বিদ্যমান আৰু এই বিভিন্নতাই পৰিস্থিতি তন্ত্ৰ এটা সুস্থিৰ অৱস্থাত থকাত সহায় কৰে। এটা পৰিস্থিতি তন্ত্ৰত থকা প্ৰজাতি সমূহৰ সামূহিক বিভিন্নতাকেই প্ৰজাতিৰ বিচিত্ৰতা বোলে। ভৌগোলিক অৱস্থানে প্ৰজাতিৰ বিচিত্ৰতাৰ ওপৰত বিশেষ প্ৰভাৱ পেলোৱা দেখা যায়।

উদাহৰণস্বৰূপে— কলম্বিয়া (বিষুৱ ৰেখাৰ ওচৰত) ১৪০০ টা প্ৰজাতিৰ পক্ষী, নিউয়ৰ্কত (৪১০° অক্ষাংশ) ১০৫ টা প্ৰজাতিৰ পক্ষী, গ্ৰীণলেণ্ডত (৭১° উঃ অক্ষাংশ) মাত্ৰ ৫৬টা প্ৰজাতিৰ পক্ষী পোৱা যায়।

৩। **পৰিস্থিতি তন্ত্ৰৰ বৈচিত্ৰ্যতা ঃ** পৰিৱেশ তন্ত্ৰত ভিন ভিন ধৰণৰ জীৱ সমুদায়ৰ মাজত বহুতো ভিন্নতা দেখা যায়। এটা পৰিৱেশ তন্ত্ৰৰ জীৱ বৈচিত্ৰ্যতা আন এটা পৰিৱেশ তন্ত্ৰৰ জীৱ বৈচিত্ৰ্যতাৰ লগত নিমিলে। পৰ্ণপাতী অৰণ্য সৰলবৰ্গীয় অৰণ্য, ক্ৰান্তীয় বৰ্ষাৰণ্য, মৰুভূমি, সাগৰীয় উপকূল অঞ্চল আদি বিভিন্ন প্ৰকাৰৰ পৰিৱেশ তন্ত্ৰই পৰিৱেশ তন্ত্ৰৰ বৈচিত্ৰ্যতা প্ৰদৰ্শন কৰে।

**জীৱ বৈচিত্ৰ্যৰ গুৰুত্ব (Value of biodiversity)ঃ**

জীৱজগতত বসবাস কৰা সকলো জীৱই জীয়াই থাকিবৰ বাবে পৰস্পৰ ইটোৱে সিটোৰ ওপৰত নিৰ্ভৰশীল। আমি আমাৰ দৈনন্দিন প্ৰয়োজনীয় বহুতো সামগ্ৰী প্ৰত্যক্ষ বা পৰোক্ষভাৱে প্ৰকৃতিৰ পৰা আহৰণ কৰো। খাদ্য সামগ্ৰী, ঔদ্যোগিক সামগ্ৰী, ঔষধ, পোচাক আদি কিছুমান এনে প্ৰয়োজনীয় সামগ্ৰীৰ উদাহৰণ। জীৱ বৈচিত্ৰ্যতাৰ হেতুকে জীৱই জীয়াই থাকিবৰ বাবে প্ৰয়োজনীয় সামগ্ৰী সমূহ প্ৰকৃতিৰ পৰা সহজতে আহৰণ কৰিব পাৰে। এই সকলো দিশ সামৰি মেকনেলীয়ে (Macnelly) ১৯৯০ চনত জীৱ বৈচিত্ৰ্যতাৰ গুৰুত্বসমূহ তলত উল্লেখ কৰা ধৰণে ভাগ কৰিছে—

১। উপভোগ্য হিচাপে গুৰুত্ব (Consumptive use value)
২। ঔদ্যোগিক সম্পদৰ উৎপাদক হিচাপে গুৰুত্ব (Productive value)
৩। সামাজিক গুৰুত্ব (Social value)
৪। নৈতিক গুৰুত্ব (Ethical value)
৫। নৈসৰ্গিক গুৰুত্ব (Asthetic value)
৬। অভিৰুচীয় গুৰুত্ব (Optional value)
৭। পৰিৱেশতান্ত্ৰিক গুৰুত্ব (Ecosystem service value)

১। উপভোগ্য হিচাপে গুৰুত্ব (Consumptive value) ঃ

মানুহে জীয়াই থাকিবৰ বাবে প্ৰয়োজনীয় সামগ্ৰী যেনে— খাদ্য, ঔষধ, ইন্ধন আদি প্ৰকৃতিৰ পৰা আহৰণ কৰে। জীৱ বৈচিত্ৰ্যতাই আমাক উপভোগ্য সামগ্ৰী সমূহ যোগান ধৰে। গতিকে উপভোগ্য হিচাপে জীৱ বৈচিত্ৰ্যতাৰ গুৰুত্ব অতুলনীয়। এই বিষয়ে তলত চমুকৈ আলোচনা কৰা হ'ল—

**(ক) খাদ্য হিচাপে ঃ** খাদ্য সামগ্ৰী হিচাপে ব্যৱহাৰ কৰা সকলোবোৰ গছ-গছনিয়েই আমি প্ৰকৃতিৰ বুকুৰ পৰা আহৰণ কৰো। প্ৰায় ৯০% খাদ্য শস্যই বনৰ পৰা সংগ্ৰহ কৰি খেতি কৰা হৈছে যাৰ ফলত নিয়মীয়া উৎপাদন পোৱা গৈছে। ইয়াৰ বাহিৰেও এক বৃহৎ সংখ্যক বনৰীয়া গছ-গছনি আমি খাদ্য হিচাপে ব্যৱহাৰ কৰো।

**(খ) ঔষধ হিচাপে ঃ** ঔষধৰ বাবে প্ৰয়োজনীয় বিভিন্ন ৰাসায়নিক পদাৰ্থ এলকালয়ড আদি আমি উদ্ভিদৰ পৰা আহৰণ কৰো। আজিও পৃথিৱীৰ বহুতো জনজাতীয় মানুহ ঔষধৰ বাবে উদ্ভিদৰ ওপৰত প্ৰত্যক্ষভাৱে নিৰ্ভৰশীল। কেইবিধ মান ঔষধি গুণ থকা উদ্ভিদৰ উদাহৰণ হৈছে— চিনকোনা, সৰ্পগন্ধা, নয়নতৰা, তুলসী, জেতুকা আদি।

**(গ) ইন্ধন হিচাপে ঃ** জুই আৱিষ্কাৰৰ দিনৰে পৰা মানুহে ইন্ধনৰ বাবে গছ-গছনিৰ ওপৰত নিৰ্ভৰ কৰি আহিছে। আজিও মানৱ সমাজে ইন্ধন হিচাপে বছৰি প্ৰচুৰ পৰিমাণৰ খৰি ব্যৱহাৰ কৰে। ইয়াৰ উপৰিও অন্যান্য ইন্ধন সামগ্ৰী যেনে— কয়লা, পেট্ৰল, ডিজেল প্ৰাকৃতিক গেছ আদিও অতীতৰ জীৱ বৈচিত্ৰ্যৰ সম্পদ যিবোৰ বহু বছৰ ধৰি মাটিৰ তলত পোত গৈ আছিল।

**২। ঔদ্যোগিক সম্পদৰ উৎপাদক হিচাপে ঃ** বহুতো ঔদ্যোগিক সামগ্ৰী যেনে— প্লাইউড, ৰবৰ, ৰেচম সূতা, কাগজ, কাঠ, চৰ্ম, ৰং, আদি আমি জীৱ বৈচিত্ৰ্যতাৰ পৰাই পাওঁ। জীৱ সম্পদৰ পৰা কেঁচা সামগ্ৰী আহৰণ কৰি বিভিন্ন ধৰণৰ উদ্যোগত এই সমূহ সামগ্ৰী উৎপাদন কৰা হয়। সেইহেতুকে জীৱ বৈচিত্ৰ্যতাৰ উদ্যোগিক সম্পদ উৎপাদক হিচাপে যথেষ্ট গুৰুত্ব আছে।

**৩। সামাজিক গুৰুত্ব ঃ** জীৱ বৈচিত্ৰ্যতাৰ সামাজিক গুৰুত্ব অনেক। পৃথিৱীৰ অধিকাংশ সমাজ ব্যৱস্থাৰ বিভিন্ন ধৰ্মীয় ৰীতি-নীতি, সামাজিক ৰীতি-নীতি, সংস্কৃতিত, উদ্ভিদ আৰু প্ৰাণী ওতঃপ্ৰোতভাৱে জড়িত হৈ থকা দেখিবলৈ পোৱা যায়। প্ৰায়বোৰ ভাৰতীয় সমাজতেই তুলসী, বেল, সৰল, পিপল, পদুম আদি গছ-গছনি ধৰ্মীয় কাম-কাজত ব্যৱহাৰ কৰা হয়। ঠিক তেনেদৰেই গৰু, হাতী, সাপ ফেঁচা আদিক পবিত্ৰ প্ৰাণী হিচাপে গণ্য কৰা হয়। অসমীয়া সমাজতো বহুতো গছ-গছনি যেনে— কপৌ, নাহৰ, ঔ, বড় গছ আদি আৰু চৰাই চিৰিকতি যেনে— কুলি, কেতেকী, ফেঁচা আদি জীৱ সম্পদৰ প্ৰভাৱ দেখা যায়।

**৪। নৈতিক গুৰুত্ব ঃ** জীৱ মণ্ডলত উপস্থিত থকা সকলো জীৱৰে পৃথিৱীত জীয়াই থকাৰ এক নৈতিক অধিকাৰ আছে। সকলোবোৰ জীৱই প্ৰকৃতিৰ সন্তোলন ৰক্ষা কৰাত ভূমিকা পালন কৰে। গতিকে জীৱ বৈচিত্ৰ্যতা সংৰক্ষণ কৰি জীৱৰ জীয়াই থকাৰ নৈতিক অধিকাৰ প্ৰদান কৰাতো জীৱ শ্ৰেষ্ঠ মানৱ জাতিৰ নৈতিক কৰ্তব্য।

**৫। নৈসৰ্গিক গুৰুত্ব ঃ** জীৱ বৈচিত্ৰ্যতাই মানুহক আনন্দ দিয়ে। সুন্দৰ গছ-বন, ফুল-লতা, চৰাই-চিৰিকতি, আশ্বৰ্য্যজনক জীৱ-জন্তু দৰ্শন কৰি



মানুহে আনন্দ লভে। গতিকে জীৱ বৈচিত্ৰ্যতাৰ নৈসৰ্গিক গুৰুত্বও আছে।

**৬। অভিৰুচীয় গুৰুত্ব ঃ** জীৱ জগতত এতিয়াও এনে বহুতো জীৱ আছে, যিবোৰ আজি পৰ্য্যন্ত আৱিষ্কাৰ হোৱা নাই। এই সমূহ জীৱৰ আৱিষ্কাৰ তথা সিহঁতৰ দেহত অন্তৰ্নিৰ্হিত মানুহৰ প্ৰয়োজনীয় সম্পদ ৰাশি আহৰণ কৰা বা গৱেষণা কৰাটোও এক গুৰুত্বপূৰ্ণ বিষয়।

**৭। পৰিৱেশতান্ত্ৰিক গুৰুত্ব ঃ** পৰিৱেশৰ ভাৰসাম্য ৰক্ষা কৰাত ক্ষুদ্ৰ অনুজীৱৰ পৰা আৰম্ভ কৰি বিয়াগোম জন্তুলৈকে, সকলোবোৰ জীৱই গুৰুত্বপূৰ্ণ ভূমিকা পালন কৰে। জীৱ জগতত শক্তিৰ প্ৰবাহ তথা বিভিন্ন ধৰণৰ জীৱৰ প্ৰয়োজনীয় খনিজ লৱণ চক্ৰ সঞ্চালনত, সকলোবোৰ জীৱই অংশ গ্ৰহণ কৰে। গতিকে দেখা যায় যে, পৃথিৱীত বসবাস কৰা সকলো জীৱৰেই পৰিৱেশতান্ত্ৰিক গুৰুত্ব আছে।

## জীৱ বৈচিত্ৰ্যৰ প্ৰতি ভাবুকি (Threats to biodiversity) ঃ

ক্ৰমবিৱৰ্তনৰ বিভিন্ন স্তৰ অধ্যয়ন কৰিলে দেখা যায় যে, বিভিন্ন সময়ত বিভিন্ন কাৰণত পৃথিৱীৰ পৰা বহুতো জীৱ বিলুপ্ত হৈ গ'ল। বৰ্তমান অৱস্থাত আন বহুতো জীৱ বিলুপ্তিৰ পথত। মানৱ সমাজৰ প্ৰয়োজন পূৰাবৰ বাবেই হওঁক বা প্ৰাকৃতিক দুৰ্যোগৰ কাৰণেই হওক, জীৱৰ বিলুপ্তিয়ে প্ৰাকৃতিক সন্তোলনত ব্যাঘাত জন্মাই জীৱ বৈচিত্ৰ্যৰ প্ৰতি ভাবুকি সৃষ্টি কৰিছে। জীৱ বৈচিত্ৰ্যতাৰ প্ৰতি ভাবুকি সৃষ্টি কৰা কেইটামান কাৰণ তলত চমুকৈ আলোচনা কৰা হ'ল—

**(ক) বাসস্থানৰ অভাৱ (Habitat loss) ঃ** বাসস্থানৰ অভাৱে জীৱ বৈচিত্ৰ্যতাৰ প্ৰতি এক বৃহৎ ভাবুকিৰ সৃষ্টি কৰিছে। মানুহৰ জনসংখ্যা বৃদ্ধি হোৱাৰ লগে লগে বনাঞ্চলৰ পৰিমাণ কমি আহিছে। মানুহে বনাঞ্চল ধ্বংস কৰি ঘৰ-বাৰী, উদ্যোগ সাজিছে। বনাঞ্চল হৈছে উদ্ভিদ, প্ৰাণী, অনুজীৱ আদি সকলোৰে বাসস্থান। বনাঞ্চল ধ্বংস হোৱাৰ লগে লগে এই সমূহ জীৱৰ বাসস্থান হেৰাই যায়, যাৰ ফলত বহু প্ৰজাতিৰ জীৱ বিলুপ্ত হয় নতুবা এক বৃহৎ আবাসিক জীৱ সৰু সৰু আবাসিক জীৱ থুপলৈ ভাগি যায়। পৃথিৱীৰ বৃহৎ বৰ্ষাৰণ্য আমাজান (যাক পৃথিৱীৰ হাওঁফাও আখ্যা দিয়া হৈছে) হাজাৰ হাজাৰ জীৱৰ আবাসস্থলী। কিন্তু এই বৰ্ষাৰণ্যখনিও, চয়াবিন খেতি কৰিবৰ বাবে কাটি ধ্বংস কৰা হৈছে। বাসস্থানৰ অভাৱৰ উপৰিও প্ৰদূষণে বহুতো জীৱ পৃথিৱীৰ বুকুৰ পৰা বিলুপ্ত কৰিছে।

**(খ) চোৰাং চিকাৰ ঃ** চোৰাং চিকাৰ জীৱ বৈচিত্ৰ্যতাৰ প্ৰতি এক ভয়ংকৰ ভাবুকি কঢ়িয়াই আনিছে। বন্য জীৱ হত্যা কৰি বনজ সম্পদৰ চোৰাং ব্যৱসায় কৰাৰ ফলত বহুতো জীৱ পৃথিৱীৰ বুকুৰ পৰা বিলুপ্তি হোৱাৰ পথত আগুৱাই গৈছে। মূল্যৱান কাঠ, গড়ৰ খৰ্গ, হাতীৰ দাঁত, বাঘৰ নখ আৰু ছাল আদিৰ বাবে চোৰাং চিকাৰীয়ে গছ কাটিছে বা এই জীৱ সমূহ হত্যা কৰে। যাৰ ফলস্বৰূপে এনেবোৰ জীৱৰ সংখ্যা দিনক দিনে কমি আহিব ধৰিছে। চোৰাং চিকাৰৰ বাবেই আমাৰ অসমৰ এশিঙীয়া গড়ৰ সংখ্যাও কমি গ'ল। আগলৈ যদি একে হাৰতে চোৰাং চিকাৰ হৈ থাকে তেনে আমাৰ মাজৰ পৰা পৃথিৱী বিখ্যাত অসম গৌৰৱ এশিঙীয়া গড় সম্পূৰ্ণভাৱে বিলুপ্ত হৈ যাব। অসমত প্ৰায় ৫২৪ টা গড় ১৯৮৬ ৰ পৰা ২০১১ চনৰ ভিতৰত চোৰাং চিকাৰীয়ে হত্যা কৰিছে।

**(গ) মানুহ আৰু বন্যজীৱৰ সংঘাত ঃ** বাসস্থানৰ অভাৱ জনসংখ্যা বৃদ্ধি আদি বহুতো কাৰকৰ বাবে বন্য জীৱ সমূহ বনাঞ্চলৰ পৰা ওলাই

আহি সঘনে মানুহৰ মুখামুখি হোৱা দেখা যায়। মানুহৰ বসতি অঞ্চলত প্ৰৱেশ কৰি বিভিন্ন ধৰণৰ ক্ষতিসাধন কৰা বাবে মানুহে এনে জীৱ সমূহ হত্যা কৰে যাৰ ফলত বন্যজীৱৰ সংখ্যা বহু পৰিমাণে কমি আহিছে। বন্যজীৱৰ উপদ্ৰৱৰ বাবে বহু সংখ্যক মানুহেও প্ৰাণ হেৰুৱাব লগীয়া হয়। উদাহৰণস্বৰূপে ২০০৪ চনত নেপালত বাঘে প্ৰায় ১৬ জন মানুহ বধ কৰিছে। এনে উদাহৰণ আমাৰ দেশতো অনেক আছে।

**(ঘ) প্ৰাকৃতিক দুৰ্যোগ ঃ** প্ৰাকৃতিক দুৰ্যোগ যেনে— ভূমিকম্প, বানপানী, ছুনামি আদি হৈছে জীৱ বৈচিত্ৰ্য ধ্বংস হোৱাৰ অন্যতম কাৰণ। বানপানীৰ বাবে প্ৰতি বছৰে ঘৰচীয়া জীৱ-জন্তু, মানুহকে আদি কৰি আন আন বহুতো বন্যজীৱৰ বিস্তৰ ক্ষতি সাধন হোৱা দেখিবলৈ পোৱা যায়। ঠিক এইদৰে ভূমিকম্প বা ছুনামিৰ বাবেও পৃথিৱীৰ বিভিন্ন ঠাইত বিভিন্ন সময়ত বহুতো জীৱ-জন্তু, গছ-গছনি আদি ধ্বংস হৈছে।

**জীৱ বৈচিত্ৰ্যৰ সংৰক্ষণ ঃ** জীৱ বৈচিত্ৰ্য দুই ধৰণে সংৰক্ষণ কৰিব পাৰি— স্ব-স্থানত আৰু পৰস্থানত

**(ক) স্ব-স্থানত সংৰক্ষণ ঃ** জীৱৰ প্ৰাকৃতিক বাসস্থানত কৰা সংৰক্ষণকে স্ব-স্থানত সংৰক্ষণ বোলা হয়। জীৱমণ্ডল সংৰক্ষিত অঞ্চল (Biosphere reserve), ৰাষ্ট্ৰীয় উদ্যান (Natural park), অভয়াৰণ্য (Sanctury), সংৰক্ষিত বনাঞ্চল (Reserve forest) আৰু সংৰক্ষিত ভূমি আদি স্ব-স্থানত সংৰক্ষণৰ উদাহৰণ—

অসমৰ কিছুমান স্ব-স্থান সংৰক্ষণৰ উদাহৰণ তলত তালিকাভুক্ত কৰা হ'ল—

**অসমৰ ৰাষ্ট্ৰীয় উদ্যান ঃ** অসমত থকা ৫খন ৰাষ্ট্ৰীয় উদ্যানৰ বিষয়ে তলৰ তালিকাত উল্লেখ কৰা হ'ল—

| ৰাষ্ট্ৰীয় উদ্যান | জিলা | প্ৰধান বন্যজীৱ | মাটিকালি (বৰ্গ কিঃমি) |
|---|---|---|---|
| ১। কাজিৰঙা ৰাষ্ট্ৰীয় উদ্যান | গোলাঘাট, নগাঁও আৰু শোণিতপুৰ | গড়, বনৰীয়া ম'হ, বাঘ, হৰিণা, হলৌ বান্দৰ আদি | ৮৫৮ |
| ২। মানস ৰাষ্ট্ৰীয় | চিৰাং আৰু বাক্সা | বাঘ, হাতী, সোণালী, বান্দৰ, নলগাহৰি আদি | ৫০০ |
| ৩। ডিব্ৰু চৈখোৱা | ডিব্ৰুগড় আৰু তিনিচুকীয়া | বনৰীয়া ঘোঁৰা, দেওহাঁহ, বনৰীয়া কুকুৰা, শিহু বনৰীয়া গাহৰি আদি। | ৩৪০ |
| ৪। নামেৰি ৰাষ্ট্ৰীয় উদ্যান | শোণিতপুৰ | বাঘ, হাতী, ভালুক, বিভিন্ন প্ৰকাৰৰ হৰিণা, পখিলা আদি | ২০০ |
| ৫। ওৰাং ৰাষ্ট্ৰীয় উদ্যান | শোণিতপুৰ | ওদালগুৰি আৰু গড়, বনৰীয়া ম'হ, বাঘ আদি | ৭৮.৮১ |



**(খ) অসমৰ অভয়াৰণ্য ঃ** অসমৰ কেইখনমান অভয়াৰণ্যৰ বিষয়ে তলৰ তালিকাত উল্লেখ কৰা হ'ল—

| অভয়াৰণ্য | জিলা | প্ৰধান বন্যজীৱ | মাটিকালি (বৰ্গ কিঃমি) |
|---|---|---|---|
| ১। আমচাং অভয়াৰণ্য | কামৰূপ (নগৰ) | হাতী, সোণালী বান্দৰ, ঢেঁকীয়াপতীয়া | ৭৮.৬৪ |
| ২। বুঢ়া চাপৰি | শোণিতপুৰ | বনৰীয়া ম'হ, হাতী, জলচৰ পক্ষী, বাঘ। | ৪৪.০৬ |
| ৩। ভেৰজান-বৰজান পদুমণি | তিনিচুকীয়া | সোণালী বান্দৰ, ঢেকীয়াপতীয়া। | ০৭.২২ |
| ৪। বৰনদী | ওদালগুৰি | নলগাহৰি, বাঘ, হাতী | |
| ৫। বৰালি | কাছাৰ আৰু কৰিমগঞ্জ | হিমালয়ৰ ক'লা ভালুক, হলৌ বান্দৰ। | ৩২৬.২৫ |
| ৬। চক্ৰশিলা | কোকোৰাঝাৰ | সোণালী বান্দৰ, | ৪৫.৫৭ |
| ৭। দিহিং পাটকাই | ডিব্ৰুগড়, তিনিচুকীয়া | দেওহাঁহ, বাঘ, সোণালী বান্দৰ | ১১১.১৯ |
| ৯। গৰম পানী | কাৰ্বি আংলং | হাতী | ০৬.০৫ |
| ১০। পবিতৰা | মৰিগাঁও | পৰিভ্ৰমী পক্ষী, গড়, ঢেকীয়াপতীয়া | ৩৮.৮০ |
| ১১। পানীদিহিং | শিৱসাগৰ | পক্ষী, | ৩৩.৯৩ |
| ১২। সোণাই ৰূপাই | শোণিতপুৰ | হাতী, দেওহাঁহ। | ২২০ |

**(খ) পৰস্থানত সংৰক্ষণ (Ex-situ conservation) ঃ**

জীৱসমূহক প্ৰাকৃতিক বাসস্থানৰ পৰা আনি কৃত্ৰিম বাসস্থানত সংৰক্ষণ কৰাকে পৰস্থানত সংৰক্ষণ বোলে। চিৰিয়াখানা, উদ্ভিদ উদ্যান, জিন বেংক আদি পৰস্থান সংৰক্ষণৰ উদাহৰণ, ইয়াৰ উপৰিও কিছুমান বিশেষ অনুষ্ঠানে, জীৱসমূহৰ অনুবংশিক পদাৰ্থ সংৰক্ষণ কৰি জৈৱ-বৈচিত্ৰ্যৰ পৰস্থান সংৰক্ষণত বিশেষ ভূমিকা পালন কৰে। এনে কেইটামান অনুষ্ঠান হৈছে—

১। উদ্ভিদৰ জিনীয় সম্পদ সংৰক্ষণ বিভাগ (National Bureau of plant genetic resources), এই অনুষ্ঠানত বিভিন্ন উদ্ভিদৰ বীজ পনীয়া নাইট্ৰজেনত অত্যন্ত শীতল অৱস্থাত (–180° পৰা –196°) সংৰক্ষণ কৰা হয়। (নতুন দিল্লীত অৱস্থিত)

২। প্ৰাণীৰ জিনীয় সম্পদ সংৰক্ষণ বিভাগ (National Bureau of animal genetic resources) ঃ কানলত অৱস্থিত।)

জীৱ বিচিত্ৰতাৰ হানি বিঘিনি হোৱা কাৰণসমূহ পৰ্যবেক্ষণ কৰিলে এটা কথা অতি সহজেই অনুমান কৰিব পাৰি যে বহুতো জীৱ প্ৰজাতি ধৰাৰ বুকুৰ পৰা

মেলানি মাগাৰ বাবে আৰু বহুতো জীৱ প্ৰজাতি মেলানি মগাৰ পথত অগ্ৰসৰ হোৱাৰ বাবে মূলতঃ মানৱ জাতিয়েই দায়ী। মানৱ সৃষ্ট কেতবোৰ কাৰ্য্য-কলাপৰ বাবে আমাৰ পৰিবেশ দ্ৰুত গতিত অৱনমিত হ'ব ধৰিছে। পৰিবেশ প্ৰদূষণে সাংঘাটিক ৰূপ ধাৰণ কৰিছে। ভূমি, জল আৰু বায়ু পলিথিন প্ৰদূষণ, ৰাসায়নিক সাৰৰ দ্বাৰা হোৱা প্ৰদূষণ, তেজস্ক্ৰিয় আদিৰ কবলত বৰ বেয়াকৈ পৰিছে। প্ৰদূষিত পৰিবেশৰ লগত খাপ খাব নোৱাৰি বহুতো জীৱ প্ৰজাতিৰ অৱলুপ্তি ঘটিছে নতুবা অৱলুপ্তি ঘটাৰ পথত আগবাঢ়িছে।

**জীৱন বিচিত্ৰতাৰ সুৰক্ষাত বহনক্ষম উন্নয়ন ঃ**

জনসংখ্যা বৃদ্ধি আৰু উন্নত জীৱন যাপন কৰিবৰ বাবে প্ৰকৃতিৰ ওপৰত মানৱ জাতিয়ে অধিক হেঁচা প্ৰয়োগ কৰাৰ ফলতেই মানুহ আৰু প্ৰকৃতিৰ মাজত সংঘাতৰ সৃষ্টি হৈছে। এই পৃথিৱীত অণুজীৱৰ পৰা আৰম্ভ কৰি বৃহৎ আকাৰৰ হাতীলৈকে প্ৰতিটো জীৱ প্ৰকৃতিৰ ওপৰত নিৰ্ভৰশীল আৰু প্ৰকৃতিৰ দ্বাৰা লালিত পালিত। যিহেতু মানুহো এবিধ জীৱ সেয়েহে এই নিয়ম মানুহৰ ক্ষেত্ৰতো সম্পূৰ্ণ প্ৰযোজ্য। ইয়াৰ অন্যথা হ'ব নোৱাৰে। সেয়েহে মানুহে নিজৰ লগতে সমগ্ৰ জীৱকুলক ৰক্ষা কৰিবৰ বাবে সদা সচেতন হ'ব লাগিব। আমি উন্নতিৰ জখলাত এনেদৰে আগুৱাই যাব লাগিব যাতে উন্নতিৰ পথত অগ্ৰসৰ হওঁতে প্ৰকৃতিৰ বিশেষ হানি বিঘিনি নহয়। আমি উন্নতিৰ পথত আগুৱাই যাওঁতে এনে উপায় অৱলম্বন কৰিব লাগিব যাতে চাউলো সিজে চৰুও ৰয়, অৰ্থাৎ মানৱ জাতিৰ উন্নতিতো বাধা নপৰে আৰু প্ৰকৃতিৰো অনিষ্ট নহয়। সেই উপায় হ'ল বহনক্ষম উন্নয়ন। বহনক্ষম উন্নয়ন অথবা গ্ৰহণীয় ক্ৰমোন্নতি হ'ল, এনে উন্নয়ন যাৰ দ্বাৰা ভৱিষ্যত প্ৰজন্মৰ কোনো ক্ষতি নকৰাকৈ বৰ্তমানৰ প্ৰয়োজনীয়তাখিনি প্ৰকৃতিৰ পৰা আহৰণ কৰা হয়। অৰ্থাৎ পৰিবেশৰ বিশেষ অনিষ্ট সাধন নকৰাকৈ আমি উন্নতিৰ জখলাত আগুৱাই যোৱাটোৱেই হ'ল গ্ৰহণীয় ক্ৰমোন্নতিৰ মূল লক্ষ্য। প্ৰকৃতিৰ হানি বিঘিনি নহ'লেই জীৱন বিচিত্ৰতাৰো কোনো হানি বিঘিনি নহয়। বহনক্ষম উন্নয়ন বাবে আমি তলত দিয়া ব্যৱস্থাসমূহ গ্ৰহণ কৰিব পাৰো।

(১) ৰাসায়নিক সাৰৰ পৰিৱৰ্তে পৰিবেশ অনুকূল সাৰ যেনে— সেউজ সাৰ, পাম সাৰ, পচন সাৰ, গোবৰ সাৰ জীৱসাৰ আদিৰ ব্যৱহাৰ কৰিলে ৰাসায়নিক সাৰৰ দ্বাৰা হোৱা ভূমি আৰু জল প্ৰদূষণ নিয়ন্ত্ৰিত হ'ব ফলত বহু জীৱ প্ৰজাতি মৃত্যুৰ কবলৰ পৰা হাত সাৰিব। ৰাসায়নিক কীটনাশক অপতৃণ নাশকৰ পৰিৱৰ্তে আন পৰিবেশ অনুকূল পদ্ধতি গ্ৰহণযোগ্য।

(২) আমি খনিজ ইন্ধন যেনে— কয়লা, কেৰাচিন, পেট্ৰল ডিজেল আদিৰ পৰিৱৰ্তে অপৰম্পৰাগত পৰিবেশ অনুকূল শক্তি সম্পদ যেনে— জীৱ ডিজেল, সৌৰ শক্তি, বতাহ শক্তি, জোৱাৰ ভাটাৰ শক্তি আদি ব্যৱহাৰ কৰিলে পৰিবেশ প্ৰদূষণ বহু পৰিমাণে কমিব। আমি অতি কম দূৰত্ব অতিক্ৰম কৰাৰ বাবে ইন্ধন চালিত যান বাহন ব্যৱহাৰ কৰাতো উচিত নহয়। ব্যক্তিগত যান বাহনতকৈ ৰাইজৰ পৰিবহন ব্যৱস্থাৰ যেনে ৰেলগাড়ী, বাচ আদিত ভ্ৰমণ কৰাত অধিক গুৰুত্ব দিব লাগে। চাৰিচকীয়া যান-বাহনতকৈ দুচকীয়া যান-বাহন ব্যৱহাৰ কৰিলে পৰিবেশ কমকৈপ্ৰদূষিত হয়।

(৩) আমাৰ সমাজত প্ৰচলিত বহুতো অন্ধ বিশ্বাসত বশৱৰ্তী হৈয়ো বহুতো জীৱই প্ৰাণ হেৰুৱাব লগাত পৰিছে। বহুতো উদ্ভিদ প্ৰজাতি যেনে কৰবী,



শিমলু, সিজু বকুল, ঔ-টেঙা, তেঁতেলি আদি বহুলোকে বাৰীত গজিলেই উভালি পেলায়। গড়ৰ খড়্গৰ ওপৰত থকা অন্ধ বিশ্বাসৰ বাবেই গড় বিলুপ্তিৰ পথত আগবাঢ়িব লগাত পৰিছে। সেয়েহে এনে অন্ধ বিশ্বাস সমূহ সমাজৰ পৰা দূৰ কৰাটো অতি প্ৰয়োজন।

(৪) জনসংখ্যা বৃদ্ধি নিয়ন্ত্ৰণ, বিশ্বৰ প্ৰতিজন নাগৰিকক সুশিক্ষাৰে শিক্ষিত কৰিলে আমাৰ পৰিবেশ বহু পৰিমাণে সুৰক্ষিত হ'ব। সি জীৱ প্ৰজাতিৰ সুৰক্ষাত সহায়ৰ হাত আগবঢ়াব।

(৫) পলিথিন জাতীয় সামগ্ৰীৰ অপব্যৱহাৰ ৰোধ, এই সামগ্ৰীবোৰৰ ঠাইত পৰিবেশত সহজে পচন হোৱা সামগ্ৰী যেনে— গছৰ পাত, কাগজ আদিৰ ব্যৱহাৰ কৰাটো বহনক্ষম উন্নয়নৰ এক উল্লেখযোগ্য দিশ। গোটা আৱৰ্জনাৰ দ্বাৰা সৃষ্ট পৰিবেশ প্ৰদূষণৰ বাবে বহু ঠাইত ভূমি জল জীৱৰ বাস অনুপযোগী হৈ পৰিছে।

(৬) আমি আমাৰ প্ৰয়োজনতকৈ অধিক সামগ্ৰী পৰিবেশৰ পৰা আহৰণ কৰাটো অনুচিত। ই বহনক্ষম উন্নয়নত হেঙাৰ হিচাপে থিয় দিয়ে।

(৭) পাৰমাণৱিক যুদ্ধৰ আখৰাৰ পৰা বিশ্বৰ প্ৰতিখন দেশ নিলগত থকা অতি প্ৰয়োজনীয়। আমি বিদ্যুৎ শক্তিকে ধৰি অন্যান্য শক্তি সম্পদ সমূহ অপব্যৱহাৰ ৰোধ কৰিব লাগে।

(৮) গভীৰ নলীনাদৰ জৰিয়তে অতিমাত্ৰা ভূ-জল সংগ্ৰহ নকৰি বৰষুণৰ পানী সংৰক্ষণ কৰাৰ ব্যৱস্থাপনাৰ জৰিয়তে ওপৰত গুৰুত্ব দিব লাগে। ঘৰৰ চালৰ পানী চৌবাচত সংগ্ৰহ কৰা, পুখুৰী আদি বৰষুণৰ পানী সংগ্ৰহ কৰা, কৃষিভূমিত বান্ধ দি বৰষুণৰ পানী সংগ্ৰহ কৰা, জলচ্ছেদ ব্যৱস্থাপনাৰ জৰিয়তে ভূ-জল সংগ্ৰহ কৰাৰ ওপৰত গুৰুত্ব দিব লাগে। বনাঞ্চলৰ পৰিমাণ বৃদ্ধি কৰি বৰষুণৰ পানী সংৰক্ষণ কৰাৰ লগতে জীৱ বিচিত্ৰতাৰ সুৰক্ষাত সহায়ৰ হাত আগবঢ়াব পাৰো।

ওপৰত উল্লেখ কৰা দিশ সমূহৰ ওপৰত অধিক গুৰুত্ব দিয়াটো বহনক্ষম উন্নয়নৰ কেইটামান উল্লেখযোগ্য লক্ষ্য। এনে ব্যৱস্থাৰ জৰিয়তে মানৱ জাতিয়েও উন্নতিৰ জখলাত আগুৱাই যাব পাৰিব প্ৰকৃতিৰো হানি-বিঘিনি নহ'ব। প্ৰকৃতিৰ হানি-বিঘিনি নহ'লেই জীৱকুল বিপৰ্য্যয়ৰ কবলৰ পৰা হাত সাৰিব। সেয়েহে আমি সকলোৱে বহনক্ষম উন্নয়নৰ ওপৰত গুৰুত্ব প্ৰদান কৰি ধৰাৰ জীৱ বিচিত্ৰতাৰ সুৰক্ষাত সহায়ৰ হাত আগবঢ়াব পাৰো যিটো বিশ্বৰ প্ৰতিজন লোকৰ এক মহান দায়িত্ব।

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# পৰিৱেশ সংৰক্ষণত গছ-গছনি সম্পৰ্কিত লোকবিশ্বাসৰ ভূমিকা

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## ০.১ অৱতৰণিকা ঃ

'লোক' শব্দই মানুহ অথবা জনতাক সাধাৰণভাৱে বুজায়। 'লোক' হ'বলৈ এটা সমষ্টি হ'ব লাগিব আৰু এই সমষ্টিৰ উমৈহতীয়া ৰীতি-নীতি, পৰম্পৰা আৰু সংস্কাৰবোধ থাকিব লাগিব। এনে ক্ষেত্ৰত 'লোক' গাঁওবাসীও হ'ব পাৰে অথবা নগৰবাসীও হ'ব পাৰে।

স্বৰূপাৰ্থত নূন্যতম উমৈহতীয়া উপাদানৰ অংশীদাৰ কোনো এক জনসমষ্টিক 'লোক' বা Folk বুলিব পাৰি। এই উমৈহতীয়া উপাদান ভাষা, ধৰ্ম, ব্যৱসায় যিকোনো হ'ব পাৰে। এইক্ষেত্ৰত আৱশ্যকীয় চৰ্তটো হ'ল— যিটো উমৈহতীয়া উপাদানেৰে সেই জনগোষ্ঠীটো গঠিত তাত থাকিব লাগিব পৰম্পৰা আৰু এই পৰম্পৰাক তেওঁলোকে নিজৰ উমৈহতীয়া মাধ্যমৰূপে গ্ৰহণ কৰিবলৈ সাজু থাকিব লাগিব।[১] কোনো এক লোক সমষ্টিয়ে পৰম্পৰাগতভাৱে আহৰণ কৰা জীৱন প্ৰণালীৰ বিভিন্ন দিশ যেনে— লোকসাহিত্য, লোকবিশ্বাস, লোকধৰ্ম, উৎসৱ-অনুষ্ঠান, লোক ঔষধ, সাজপাৰ, খাদ্যাভ্যাস, গৃহ নিৰ্মাণ, কৃষি পদ্ধতি, আচাৰ-অনুষ্ঠান, লোকভাষা, লোকনৃত্য, খেলা-ধূলা, অৱসৰ-বিনোদন আদিয়ে সেই লোকসমষ্টিৰ লোকজীৱনৰ আধাৰ। সমষ্টিগত জীৱনৰ আধাৰস্বৰূপ একে ধ্যান-ধাৰণা, বিশ্বাস-পৰম্পৰা, ৰীতি-নীতি আদিত সেই লোক সমাজখনৰ অৰ্থনৈতিক, সামাজিক, সাংস্কৃতিক, প্ৰাকৃতিক দিশসমূহ নিহিত হৈ থাকে। লোকসমাজত বৰ্তি থকা লোকবিশ্বাসমূহে মানুহৰ যুক্তিপ্ৰৱণতাৰ ওপৰত প্ৰভাৱ বিস্তাৰ কৰি আহিছে। মানৱ জীৱনৰ লগত প্ৰত্যক্ষ বা পৰোক্ষভাৱে জড়িত চৌদিশে থকা প্ৰাকৃতিক পৰিৱেশে আৱহমান কালৰেপৰা মানুহৰ অন্তৰত যি কৌতুহলৰ সৃষ্টি কৰিছিল তাৰ পৰিণতিত সৃষ্টি হৈছিল জনশ্ৰুতি (Legends), অতিকথা (Myth), সাধুকথা (Tales) আদি। এইদৰে লোকবিশ্বাসসমূহেও মানুহৰ মন-মগজুত থিতাপি লৈ লোকসমাজত পৰম্পৰাগতভাৱে চলি থাকিল।



পৃথিৱীৰ জ্ঞাত বা অজ্ঞাত যিসমূহ শক্তিয়ে মানুহৰ মনত বিস্ময় বা কৌতূহল সৃষ্টি কৰি আহিছে, সেই শক্তিয়ে মানুহক কেতিয়াবা ভীতিগ্ৰস্তও কৰি আহিছে। সেয়েহে এনে শক্তিসমূহক বশীভূত কৰি নিজৰ নিয়ন্ত্ৰণত ৰাখি শুভফল লাভৰ প্ৰচেষ্টা মানুহে আদিম কালৰ পৰা কৰি আহিছে। তাৰ পৰিণতিতে মানৱ সমাজত জন্ম হৈছে বিশ্বাস, আচাৰ-অনুষ্ঠান, ক্ৰিয়া-কাণ্ড। ড° নবীন চন্দ্ৰ শৰ্মাৰ মতে— "লোকবিশ্বাস ক্ৰিয়া-কাণ্ড আৰু আচাৰ-অনুষ্ঠানৰ চনদ।"[২]

আমাৰ এই প্ৰবন্ধত কেইবিধমান গছ-গছনিৰ লগত সম্পৰ্কিত লোকবিশ্বাস আৰু ব্যৱহাৰ সম্পৰ্কে আলোকপাত কৰিবলৈ প্ৰয়াস কৰা হৈছে। লগতে এই লোকবিশ্বাসসমূহে পৰিৱেশ সংৰক্ষণতো যে ভূমিকা গ্ৰহণ কৰিছে তাক বিশ্লেষণ কৰিবলৈ যত্ন কৰা হৈছে।

## ০.২ গছ-গছনি সম্পৰ্কিত লোকবিশ্বাস ঃ

প্ৰকৃতি জগতৰ বিভিন্ন উপাদানসমূহৰ ভিতৰত বৃক্ষ বা গছ অন্যতম। গছৰ সৌন্দৰ্য আৰু মানৱ জীৱন ধাৰণত ইয়াৰ প্ৰৱল ভূমিকাই মানুহৰ মনত এনে কিছুমান বিশ্বাসৰ জন্ম দি আহিছে যে এটা সময়ত মানুহে বিশ্বাস কৰিবলৈ ল'লে— গছ হ'ল এই বিশ্বৰ নিয়ন্ত্ৰকজনৰ আৱাসস্থান। এনে ধাৰণা বা বিশ্বাসক ভেটি কৰিয়েই মানৱ সমাজত প্ৰচলিত হ'ল বিভিন্ন বৃক্ষৰ পূজা-পাতল। গছ-গছনিৰ সুশীতল প্ৰচ্ছায়া, অৰণ্যানিৰ গভীৰতা আৰু প্ৰয়োজনীয়তাই মানৱ জীৱনক গছৰ প্ৰতি শ্ৰদ্ধা আৰু ভক্তিপ্ৰৱণ কৰি তুলিছিল।

বৃক্ষ পূজা অতি প্ৰাচীন পৰম্পৰা। ভাৰতবৰ্ষৰ বাহিৰে পৃথিৱীৰ বিভিন্ন সংস্কৃতিতো বৃক্ষ-পূজাৰ পৰম্পৰা অতি প্ৰাচীন কালৰে পৰা চলি আহিছে। ইয়াৰ আভাস পোৱা যায় জনলাব্বক, টাইলৰ, ফাৰ্গুছন, মনিয়ৰ উইলিয়ামছ আদি মনীষীসকলৰ গ্ৰন্থৰপৰা।[৩] অসমীয়া সমাজতো বৃক্ষ পূজাৰ পৰম্পৰা অতি প্ৰাচীন। বিভিন্ন পূজা, উৎসৱ-অনুষ্ঠান আদিত বিভিন্ন গছক পূজা কৰা হয়। এনে পূজা-পাতল বা আচাৰ-অনুষ্ঠানৰ লগত প্ৰচলিত হৈ আহিছে কিছুমান লোকবিশ্বাস। এই লোকবিশ্বাসৰ ভিত্তিয়ে পৰিৱেশ সচেতনতা আৰু সংৰক্ষণতো বিশেষ ভূমিকা গ্ৰহণ কৰি আহিছে। প্ৰাচীন কালৰে পৰা শ্ৰদ্ধা সহকাৰে বৃক্ষ ৰোপণ ৰীতি প্ৰচলিত হৈ আহিছে। অসমীয়া লোকসাহিত্য, লোকবিশ্বাস আৰু লোকপৰম্পৰাইও এই ৰীতি বহন কৰি আছে।

## ০.৩ অসমীয়া লোকসমাজত প্ৰচলিত কেইটামান লোকবিশ্বাস ঃ

১. লোকজীৱনত বিশ্বাস প্ৰচলিত আছে যে ডাঙৰ গছত অপদেৱতা থাকে। সেয়েহে গছজোপাকাটিবলৈ হ'লে বা আন এজোপা গছলৈ অপদেৱতা খেদিবৰ বাবে গছজোপাৰ গুৰিত পূজা দিব লাগে।

২. অসমৰ কোনো কোনো অঞ্চলত এই বিশ্বাস আছে যে বৰষুণৰ বতৰত যখিনীয়ে উলংগ হৈ ইন্দ্ৰক বিদ্ৰূপ কৰে। সেয়ে ইন্দ্ৰ দেৱতাই যখিনীলৈ লক্ষ্য কৰি বজ্ৰপাত কৰে। গছে সেই বজ্ৰ মূৰ পাতি লৈ মানুহ-গৰু, ঘৰ-দুৱাৰ আদি ৰক্ষা কৰে।

৩. অসমৰ কোনো কোনো অঞ্চলত বিশ্বাস

প্ৰচলিত যে ধৰুৱাই ধাৰ পৰিশোধ নকৰিলে পৰজন্মত ধৰুৱাজন গছ হৈ জন্মে আৰু মহাজনে সেই গছজোপাৰ ওপৰত আন এজোপা গছ হৈ জন্মে।

৪. আঁহত গছ অসমীয়া লোকে খৰি হিচাপে ব্যৱহাৰ নকৰে। লোকবিশ্বাস মতে, মহাভাৰতৰ অশ্বত্থামাই আঁহত গছৰ ৰূপ পৰিগ্ৰহ কৰিছিল। আঁহত গছৰ আগত ব্ৰহ্মা, মূলত বিষ্ণু, শাখাত মহেশ্বৰ আৰু পাতত দেৱতাসকলে বাস কৰে বুলি বিশ্বাস কৰা হয়। স্নান কৰি আঁহতৰ গুৰিত পানী দিলে পুণ্য সাধন হয় বুলি বিশ্বাস।

৫. বৰ, পাকৰি, আঁহত আদি গছৰ তলত বুঢ়ী গোসাঁনী, শীতলা দেৱী, কালী দেৱী, গৰখীয়া সেৱা কৰাৰ উপৰিও তিৰোতাসকলেও মিলিজুলি নাম গায়। এনে গছৰ তলত নাম ধৰিলে বা পূজা-সেৱা কৰিলে গাঁৱত বিপদ-আপদ, অপায়-অমঙ্গল নহয় বুলি লোকবিশ্বাস প্ৰচলিত।

৬. মাঘ বিহুৰ উৰুকাৰ দিনা ধান খেৰেৰে বাৰীত থকা ফল-মূলৰ গছৰ গুৰিত বান্ধ দিয়াৰ লোকপৰম্পৰা আছে। উৰুকাৰ দিনা এনেদৰে নাবান্ধিলে গছত ফল নধৰে বুলি লোকবিশ্বাস আছে।(উৎস ঃ অসমীয়া লোকসংস্কৃতিৰ আভাস)

**০.৪ বিষয় বিশ্লেষণ ঃ**

১) তুলসী ঃ তুলসীক বিষ্ণুৰ প্ৰিয় গছ বুলি বিশ্বাস কৰা হয় আৰু ইয়াক অতি পবিত্ৰ বুলি ধৰা হয়। ভাৰতীয় পৰম্পৰাত তুলসী পূজা আৰু তুলসী গছৰ তলত চাকি-বন্তি জ্বলোৱা এক প্ৰথা আছে। যিকোনো ধৰ্মীয় কৰ্মত— তুলসী পাত এক নৈবেদ্য। আনহাতে তুলসী পাতৰ ঔষধি গুণো প্ৰচুৰ। কফজনিত অসুখ নিৰাময়, হজমী শক্তি বৃদ্ধি, কৃমি নাশ, তুলসীৰ গুটিয়ে প্ৰস্ৰাৱজনিত ৰোগ নিৰাময়, স্মৰণ শক্তি বৃদ্ধি, খৰ-খজতিৰ উপশম, কৌষ্ঠ-কাঠিন্য দূৰ কৰা, মাতৃ দুগ্ধ বৃদ্ধি কৰাত তুলসীৰ পাত বা গুটিয়ে ঔষধি কাম কৰে।

সেয়েহে তুলসীক লৈ বিভিন্ন লোক ঔষধ, লোকবিশ্বাস গঢ় লৈ উঠিছে। ডাকৰ বচন, খণ্ডবাক্য, লোকগীত আদিতো তুলসীৰ স্থান মন কৰিবলগীয়া। যেনে— 'তুলসীৰ লগত কলপটুৱাৰ মুক্তি' অৰ্থাৎ মহৎ জনৰ লগত থাকি উদ্ধাৰ পোৱা ইত্যাদি।

ডাকৰ বচনত তুলসীৰ ঔষধি প্ৰয়োগ সম্পৰ্কে বহু উল্লেখ আছে। যেনে—

কাল তুলসী বেলপাত সমে আনি খুন্দি
পটাত তপত কৰিয়া জলান খাইব
তেবেসে নাৰীৰ দুঘক পাইব।

অসমীয়াৰ কাতিবিহুত তুলসী পুলি ৰোপণ কৰি তাত চাকি-বন্তি জ্বলাই প্ৰাৰ্থনা কৰাটো এক জাতীয় পৰম্পৰা। ইয়াৰ জড়িয়তে তুলসীৰ দৰে লাগতিয়াল গছ ৰোপণ কৰাৰ সচেতনতা মন কৰিবলগীয়া। তুলসী গছ ৰোপণ আৰু সংৰক্ষণ কৰিব লাগে, এনেধৰণৰ বিশ্বাস আৰু পৰম্পৰাই জনমানসত পৰিৱেশ সম্পৰ্কীয় সচেতনতা গঢ় দিয়াত সহায় কৰে। ইয়াৰ ফলত পৰিৱেশ সংৰক্ষণতো প্ৰভাৱ পৰে।

অশুচি গাৰে তুলসী গছ স্পৰ্শ কৰিব নাপায় অথবা ঋতুস্নাতা মহিলাই তুলসী স্পৰ্শ কৰিব নাপায়, ঘৰৰ কাষত কলীয়া তুলসী গছ থাকিলে ঘৰখনৰ মঙ্গল হয় আদি লোকবিশ্বাসে জনসমাজত তুলসীৰ প্ৰয়োজনীয়তাৰ প্ৰমাণ কৰে। তুলসী গছক



লৈ গোৱা কিছুমান লোকগীতো আছে। যেনে—

তুলসীৰ তলে তলে
মৃগ পহু চৰে
তাকে দেখি ৰামচন্দ্ৰই
হৰধনু ধৰে। ইত্যাদি।

১) বেল ঃ বেল এবিধ সুস্বাদু ফল। পকা বেল গাখীৰৰ লগত মিলাই খালে ই শক্তিবৰ্দ্ধন কৰে। সাধু-সন্ন্যাসীৰ বাবে প্ৰিয় আহাৰ বেল। বিভিন্ন ৰোগত বেলক পথ্য হিচাপেও ব্যৱহাৰ কৰা হয়। বেলৰ চৰবত খালে শৰীৰ শীতল হয়।

প্ৰাচীন কালৰে পৰা বেল গছক পূজা কৰা ৰীতিও চলি আহিছে। শিৱ-পাৰ্বতী বেলগছৰ তলত থাকে বুলি এক লোকবিশ্বাস আছে। সেয়েহে শিৱ পূজাত বেলপাত অপৰিহাৰ্য। পূজাৰ মণ্ডল দিবৰ বাবে বেলপাতৰ গুৰি প্ৰয়োজন। আন এক লোকবিশ্বাস মতে বেল ফল প্ৰজননৰ প্ৰতীক। বেল ফল দেখি মহাদেৱৰ বীৰ্যপাত হৈছিল আৰু সেই বীৰ্যৰ পৰা জন্ম হৈছিল পদ্মাৱতীৰ। লোকবিশ্বাসে গঢ় দিয়া পৰম্পৰা অনুসৰি বেলগছৰ গুৰিত দুপৰীয়া আৰু সন্ধ্যা ধূপ-দীপ দি সেৱা-সৎকাৰ কৰিলে মহাদেৱ সন্তুষ্ট হয়। কিছুমান অঞ্চলত বেলগছৰ তলত শিৱমন্দিৰ পাতি শিৱ পূজা কৰা হয়। লোকবিশ্বাস মতে শিৱ-পাৰ্বতী আৰু বাসুদেৱৰ অতি প্ৰিয় গছ বেল।

এনেদৰে একোজোপা গছত দেৱত্ব আৰোপ কৰি সেইজোপা গছৰ ৰক্ষণাবেক্ষণ আৰু সেৱা-সৎকাৰৰ যোগেদি পৰিৱেশ সংৰক্ষণৰ এক সুন্দৰ আহিলা লোকবিশ্বাসসমূহে তৈয়াৰ কৰি আহিছে। সুমিষ্ট আৰু উপাদেয় ফল আহৰণৰ উপৰিও এনে গছৰ সুশীতল সেউজী প্ৰচ্ছায়াই প্ৰকৃতি জগতকো সুন্দৰ কৰি ৰখাৰ ক্ষেত্ৰত এক ভূমিকা গ্ৰহণ কৰিছে।

৩) তামোল-পাণ ঃ সমাজৰ বিভিন্ন কাৰ্যত তামোল-পাণ অপৰিহাৰ্য। ধৰ্মীয় নীতি-নিয়মৰ ক্ষেত্ৰতো গুৱা-পাণ এযুৰি আগ নবঢ়ালেই নহয়। মান-সৎকাৰৰ ক্ষেত্ৰতো তামোল-পাণ দি সেৱা আগবঢ়াব লাগে। অসমীয়া লোকসাহিত্যত তামোল-পাণৰ উল্লেখ প্ৰচুৰ পৰিমাণে পোৱা যায়। বিহুনাম, বিয়ানাম, ডাকৰ বচন, তন্ত্ৰ-মন্ত্ৰ আদিত তামোল-পাণৰ উল্লেখ আছে। ইয়ে প্ৰমাণ কৰে অসমীয়া সমাজত তামোল-পাণৰ প্ৰয়োজন কিমান। এগৰাকী যুৱতীক বিয়া দি উলিয়াই দি শোকাকুল মুহূৰ্ততো সজীৱ হৈ উঠে বিয়া নামত এনেদৰে—

আগবাৰী শুৱনি   কাকিণী তামোল
পাছবাৰী শুৱনি পাণ
বৰ ঘৰ শুৱনি   গাভৰু ছোৱালী
উলিয়াই দিবলৈ টান।

খনাৰ বচনত তামোল-পাণৰ খেতি সম্পৰ্কে এনেদৰে আছে—

নাৰিকলৰ আঠ তামোলৰ আঠ
এৰ ঘন হ'লে তৎক্ষণাৎ কাট।
শুনাহে বাপু চহাৰ পো
তামোলৰ গুৰিত মদাৰ ৰো।
মদাৰৰ পাত গুৰিত পৰি
ফল বাঢ়ে চট চট কৰি।

আনহাতে তামোল খুৱাই আছুঁদি কৰিব পাৰে বুলি থকা বিশ্বাস বিহুগীততো প্ৰকাশ পায় এনেদৰে—

কি কথা কৰিলা   কি বুধি কৰিলা
থুৰিয়া তামোলৰ লগত।
খাওঁতে শোওঁতে   উঠোতে বহোতে
সদায় পৰি থাকে মনত।

ইন্দো-ইউৰোপীয় ভাষীৰ মাজত তামোলৰ ব্যৱহাৰ নাই। তামোলৰ লগত ইন্দোচীন লোকৰহে সম্পৰ্ক আৰু ইয়াৰ লগত অষ্ট্ৰিক সভ্যতা ওতঃপ্ৰোতভাৱে জড়িত আছে।[৪] তামোলৰ লগত সম্পৰ্কিত বিভিন্ন লোকবিশ্বাসে অসমীয়া সমাজত প্ৰভাৱ পেলাই আহিছে। ভাত খাই উঠি তামোলেৰে মুহুদি কৰিলেহে মুখ শুদ্ধি হয়। যাৰে তাৰে হাতেৰে কটা তামোল খাব নাপায়, এনে ধৰণৰ বিশ্বাসো আমাৰ সমাজত নথকা নহয়। বিহুৰ নামত ইয়াৰ প্ৰকাশ পাইছে এনেদৰে—

তোমাৰ কটা তামোল নেখাওঁ ঐ লাহৰি
আমাৰে মৰিব কুল।

জাত যোৱাৰ ভয়ত যাৰে তাৰে হাতৰ তামোল নোখোৱা আমাৰ সমাজত এনে পৰম্পৰাও আছে যে কোনো দোষত দোষী সাব্যস্ত হোৱা অভিযুক্তই এযুৰি গুৱা-পাণেৰে ৰাইজৰ আগত সেৱা ল'লেই সকলো দোষ মৰিষণ হয়। এনেদৰে বিভিন্ন কাৰ্যত তামোল-পাণৰ ব্যৱহাৰে অসমীয়া সমাজত এক মুখ্য ভূমিকা পালন কৰিছে। অসমীয়া সমাজত এনেদৰে পবিত্ৰ ৰূপত ব্যৱহাৰ হোৱা তামোল-পাণে ভৰি থকা গৃহস্থী ঘৰখনে এক সুকীয়া পৰিৱেশ গঢ় দি আহিছে। আৰ্থিক দিশতো তামোল-পাণে এক মূল্যবান ভূমিকা লৈ আছে।

৪) **কলগছ ঃ** কল এবিধ সুস্বাদু ফল। কলগছৰ শিপাৰ পৰা পাত পৰ্যন্ত প্ৰতিটো অংশই ব্যৱহাৰৰ উপযোগী। কলগছৰ প্ৰতিটো অংশই হিন্দু ধৰ্মত অপৰিহাৰ্য আৰু পবিত্ৰ বস্তু বুলি বিবেচনা কৰা হয়। ধৰ্মীয় কাৰ্যত কলপাতত দ্ৰব্য আগবঢ়োৱা কলপাতত প্ৰসাদ আদি খোৱা নিয়ম আছে। কলপাতক পবিত্ৰ গণ্য কৰাৰ বাবেই বিভিন্ন পূজা-পাৰ্বণত দেৱ-দেৱীৰ বাবে কলপাতত নৈবেদ্য আগবঢ়োৱা হয়।

লোকবিশ্বাস মতে নিস্তাৰিণী দেৱীয়ে বোঁৱতী নৈৰ পানীত উটি যোৱা কলপাতত ভাত খাইছিল। ইয়াৰ ফলতে নিস্তাৰিণী দেৱী গৰ্ভৱতী হৈছিল। ঠিক সেইদৰে সতী বেউলাই ৰামকলৰ ভুৰ বা ভেলত তুলি স্বামীৰ শৱদেহটো স্বৰ্গলৈ নিছিল। লোকসমাজত প্ৰচলিত বিভিন্ন আচাৰ-অনুষ্ঠানত, মাঙ্গলিক কাৰ্য সমাধানত কলপুলি, কলপাত, কলৰ ব্যৱহাৰ মন কৰিবলগীয়া। দৰা-কইনাক কলপুলি ৰুই বেই তলত নোওৱা হয়। বিয়া নামত কলপুলিৰ উল্লেখ আছে এনেদৰে—

চাৰিওফালে কলৰ পুলি
হালি আছে নল
কলহে কলহে ঢালে
যমুনাৰে জল।

বিয়াৰ দৰে মাঙ্গলিক অনুষ্ঠানত পদূলি মুখতে দুটা কলপুলি ৰুইহে দৰা আদৰা হয়। ঠিক সেইদৰে কাতিবিহুত পথাৰত কলপুলি ৰুই চাকি-বন্তি দিয়া হয়। দীপান্বিতাতো কলপুলি পুতি চাকি-বন্তি জ্বলোৱা হয়। অন্য এক লোকবিশ্বাসমতে শ্মশানত কলপুলি ৰুলে তাৰ ফল খাই চৰাই-চিৰিকতিয়ে মৃতকক আশীৰ্বাদ দিয়ে।

এনেধৰণৰ লোকবিশ্বাস আৰু ৰীতি-নীতিৰ ফলত কল গছ আমাৰ সমাজত অপৰিহাৰ্য ৰূপে পৰিগণিত হৈছে। এই অপৰিহাৰ্যতা পূৰণৰ বাবে সেই গছ ৰোপণৰ বাবেও মানুহ সচেতন হোৱা দেখা যায়। ইয়ে জনসমাজৰ প্ৰয়োজনীয়তাৰ উপৰিও প্ৰকৃতি জগতৰ পৰিৱেশ সংৰক্ষণতো এক উল্লেখনীয় ভূমিকা গ্ৰহণ কৰিব পাৰে। ইয়াৰ উপৰিও অসমীয়া পৰম্পৰাগত খাদ্যাভ্যাসৰ লগতো কলৰ খাৰ, কলপচলা, কলপাতত দিয়া মাছ, কলডিল আদিৰ ব্যৱহাৰ আছে। প্ৰকৃতিৰ ওপৰত নিৰ্ভৰশীল মানৱ জীৱনে সেয়েহে কলগছৰ দৰে গছক অতি ভক্তিৰে মাঙ্গলিক কাৰ্যত ব্যৱহাৰ কৰে আৰু পবিত্ৰ বুলি জ্ঞান কৰে।

৫) **আমগছ ঃ** যাগ-যজ্ঞ আদিত ব্যৱহৃত পঞ্চ পল্লৱৰ ভিতৰত আমো এবিধ। আম গছৰ ফল যিদৰে স্বাদযুক্ত আৰু উপকাৰী, সেইদৰে ইয়াৰ গা-গছ জোপাও বিভিন্ন কামৰ উপযোগী। আমগছৰ পাত বিভিন্ন মাঙ্গলিক কাৰ্যত ব্যৱহাৰ কৰাৰ নিয়ম আৰু বিশ্বাস আমাৰ জনসমাজত প্ৰচলিত আছে। বিবাহ অনুষ্ঠানত আমদালি গাঠি ঘৰৰ দুৱাৰমুখ আৰু পদূলি মুখত আঁৰি দিয়াৰ নিয়ম আছে। এঁৰা সূতাত গঠা আমৰ পাত পবিত্ৰতাৰ প্ৰতীক হিচাপে গণ্য কৰা হয়। মঠ-মন্দিৰৰ পূজা-পাৰ্বণৰ সময়তো আমদালি গাঠি অঁৰাৰ নিয়ম আছে। পূজাৰ ঘট, বিবাহ কাৰ্যত ব্যৱহৃত দুনৰি আদিত আমপাত ৰখাতো এক লোকৰীতি বুলিব পাৰি।

পবিত্ৰ গছ হিচাপে জ্ঞান কৰা এই আম গছে মানৱ জীৱনৰ নানা অসুখ-বিসুখতো লোক ঔষধৰ কাম কৰে। আম গছৰ বতাহে বায়ু শোধন কৰি ৰাখে আৰু বসন্ত ৰোগ প্ৰতিহত কৰে। আমৰ ৰসৰ পৰা তৈয়াৰ কৰা আমতা খালে শৌচ খোলোচা হয়, পিত্ত আৰু বায়ু নাশ হয়, হজমী শক্তি বৃদ্ধি পায়। পকা আম বীৰ্যবৰ্ধক। ধাতুৰ দুৰ্বলতা নাশ কৰিবলৈ পকা আমৰ ৰস উপকাৰী। অসমৰ চাহ জনগোষ্ঠীৰ এক লোক পৰম্পৰা অনুসৰি চৈত পৰৱ বা চাডুল পূজাৰ পাছৰ পৰাহে আম খোৱাৰ নিয়ম। এওঁলোকৰ বিয়াৰ দিন-বাৰ ঠিক কৰাৰ পাছত দৰা পক্ষই এখিলা আমপাতত হালধিৰ টুকুৰা, ৰং কৰা চাউল, বেলপাত, দুবৰি টোপোলা বান্ধি 'লগন' আনে।

মানৱ জীৱনৰ লগত সম্পৃক্ত বিভিন্ন ধৰ্মীয় প্ৰকাৰ্য, আচাৰ-অনুষ্ঠানত আম গছৰ বিভিন্ন অংশক পবিত্ৰভাৱে ব্যৱহাৰ কৰা হয়। সেয়েহে এনেবোৰ বিশ্বাস আৰু পৰম্পৰাবোধৰ আধাৰিত মানৱৰ জীৱনশৈলীয়ে আম গছ ৰোপণ আৰু সংৰক্ষণৰ প্ৰয়োজনীয়তা নুই কৰিব নোৱাৰে।

### ০.৫ সামৰণি ঃ

প্ৰাচীন কালৰ পৰা মানৱ জীৱন প্ৰকৃতি নিৰ্ভৰ। প্ৰাকৃতিক শক্তিসমূহে বিভিন্ন সময়ত মানুহৰ জীৱনশৈলীক ভীতিগ্ৰস্ত কৰি তুলিলেও প্ৰকৃতিৰ অকৃপণ দানে মানৱ জীৱনক আশীষ প্ৰদান কৰিও আহিছে। শস্য-মৎস্য, পশু-পক্ষী, গছ-বিৰিখ সমন্বিত পৰিৱেশেহে মানৱ জীৱন তথা সভ্যতাক সুৰক্ষিত কৰিব। প্ৰকৃতিৰ অকৃত্ৰিম পৰিৱেশ আৰু মানৱসৃষ্ট প্ৰযুক্তি প্ৰধান পৰিৱেশৰ মাজত যথেষ্ট পাৰ্থক্য আছে। কিন্তু মানৱ সভ্যতাৰ উন্নতিত দুয়োটাৰে প্ৰয়োজনীয়তাক নুই কৰিব নোৱাৰি। প্ৰকৃতি জগত আৰু প্ৰযুক্তি বিজ্ঞান দুয়োটাৰ সহঅৱস্থানেহে মানুহক নিৰাপত্তা দিব পাৰিব এই কথা ধ্ৰুৱ। যন্ত্ৰসৰ্বস্ব মানৱ জীৱনে সেয়েহে প্ৰকৃতি জগতকো এক সুকীয়া মৰ্যাদা আৰু সস্নেহ আলিঙ্গন কৰিবলৈ শিকিব লাগিব।

আমাৰ সমাজত বৰ্তি থকা বহু লোক পৰম্পৰা, লোকবিশ্বাস, লোককথাই মানৱ জীৱন আৰু প্ৰকৃতি জগতৰ সুসম্পৰ্কৰ ভেটি গঢ়ি থৈ

যোৱাৰ লগতে এইবিলাকৰ গ্ৰহণযোগ্যতা সম্পৰ্কেও সকীয়াই গৈছে। সেয়েহে আমি সকলোৱে প্ৰতিশ্ৰুতিবদ্ধ হোৱা উচিত যে আমি জীয়াই থাকিবৰ বাবে প্ৰকৃতি জগতৰ পৰিৱেশো সুৰক্ষিত কৰিব লাগিব।

**প্ৰসঙ্গ সূত্ৰ ঃ**

১. Alan Dundes (ed.) : The Study of Faeklore Prentice Hall Inc. 1965 p. 2

২. ড° নবীন চন্দ্ৰ শৰ্মা ঃ অসমীয়া লোকসংস্কৃতিৰ আভাস বাণী প্ৰকাশ, ২০০৫, পৃ. ১০০

৩. ঐ, পৃ. ১১৩

৪. ড° বিৰিঞ্চি কুমাৰ বৰুৱা ঃ অসমীয়া ভাষা আৰু সংস্কৃতি জাৰ্ণাল এম্পৰিয়াম, ১৯৮৮, পৃ. ৫

**গ্ৰন্থপঞ্জী ঃ**

**অসমীয়া**

১. শইকীয়া নগেন ঃ অসমীয়া মানুহৰ ইতিহাস কথা প্ৰকাশন, গুৱাহাটী, ২০১৩

২. শৰ্মা নবীন চন্দ্ৰ ঃ লোক সংস্কৃতি চন্দ্ৰ প্ৰকাশ, গুৱাহাটী প্ৰথম প্ৰকাশ, ১৯৯৭

ঃ অসমীয়া লোকসংস্কৃতিৰ আভাস বাণী প্ৰকাশ, গুৱাহাটী, ৩য় প্ৰকাশ, ২০০৪

৩. গগৈ চাও লোকেশ্বৰ ঃ অসমৰ লোকসংস্কৃতি ক্ৰান্তিকাল প্ৰকাশন, ২০১১ চন

**ইংৰাজী ঃ**

1. Dorson, Richard M. (ed.) : Folklore and Folklife : An Introduction The University Press, Chicago, USA First Publish 1972



# ডিব্ৰু মহাবিদ্যালয়ৰ শৈক্ষিক পৰিৱেশ আৰু সাহিত্য চৰ্চা

**ড° বিজু মৰাণ**
সহকাৰী অধ্যাপক
অসমীয়া বিভাগ

**০.০০ অৱতৰণিকা ঃ**

ব্ৰিটিছ ঔপনিৱেশিক কালৰেপৰা সমগ্ৰ অসমৰ প্ৰেক্ষাপটত যিবিলাক নগৰে অৰ্থনৈতিক, ৰাজনৈতিক, বাণিজ্যিক, সামাজিক, সাংস্কৃতিক আদি সকলো দিশৰেপৰা গুৰুত্ব লাভ কৰিছিল তাৰ ভিতৰত ডিব্ৰুগড় চহৰ আছিল অন্যতম। পোনতে অবিভক্ত লক্ষীমপুৰ জিলাৰ এটা গুৰুত্বপূৰ্ণ মহকুমা ডিব্ৰুগড়ে কালক্ৰমত পূৰ্ণাঙ্গ জিলাৰ মৰ্যাদা লাভ কৰে। তদুপৰি ৰবাৰ্ট ব্ৰুক চাহাবে অসমত চাহখেতিৰ প্ৰচুৰ সম্ভাৱনাৰ কথা দেশে-বিদেশে প্ৰচাৰ কৰিলে। অসমৰ জলবায়ু চাহখেতিৰ বাবে উপযোগী হোৱাত কাজেই উজনি অসমে অভাৱনীয় গুৰুত্ব লাভ কৰিলে। ইয়াৰ ভিতৰত ডিব্ৰুগড় জিলাই চাহখেতিৰ বাবে বিৰল খ্যাতি অৰ্জন কৰি চাহনগৰী হিচাপে কালক্ৰমত জনাজাত হ'ল। ইয়াৰ উপৰি ব্ৰিটিছ ঔপনিবেশিক কালতে প্ৰতিষ্ঠা লাভ কৰা অসমৰ প্ৰথমখন চিকিৎসা মহাবিদ্যালয় 'অসম চিকিৎসা মহাবিদ্যালয়'; উজনি অসম তথা ভাৰতবৰ্ষৰ পূব দিশত ভাৰত-চীন আন্তঃৰাষ্ট্ৰীয় সীমালৈকে অৱস্থিত একমাত্ৰ উচ্চ শিক্ষাৰ শিক্ষানুষ্ঠান 'ডিব্ৰুগড় বিশ্ববিদ্যালয়'ৰ প্ৰতিষ্ঠাই ডিব্ৰুগড় চহৰৰ খিয়াতি অক্ষুণ্ণ ৰাখিলে। ব্ৰিটিছে প্ৰতিষ্ঠা কৰি যোৱা চৰকাৰী কাৰ্যালয়, কাছাৰী আদিৰ অনুপম স্বাক্ষৰ এতিয়াও সমগ্ৰ ডিব্ৰুগড় জিলাত সিঁচৰতি হৈ আছে।

উইলিয়াম হেনৰী কটনে ১৯০১ চনত অসমৰ প্ৰথমখন উচ্চশিক্ষাৰ অনুষ্ঠান 'কটন কলেজ' প্ৰতিষ্ঠা কৰাৰ পাছৰেপৰা অসমত শিক্ষাৰ বিকাশৰ ক্ষেত্ৰত এটা নতুন ঢল বৰলৈ লয়। পৰৱৰ্তীকালত অসমত ভালেসংখ্যক উচ্চশিক্ষাৰ প্ৰতিষ্ঠান গঢ় লৈ উঠে আৰু শিক্ষাৰ প্ৰচাৰ আৰু বিকাশত সমগ্ৰ অসমভূমিক এটা সুকীয়া মাত্ৰা প্ৰদান কৰে। ব্ৰিটিছে শাসন কৰি থকা কালতে ১৯৪৫ চনত ডিব্ৰুগড় জিলাৰ প্ৰথমখন উচ্চশিক্ষাৰ পীঠস্থান 'ডিব্ৰুগড় কলেজ' প্ৰতিষ্ঠা হয়। এই মহাবিদ্যালয়খনিয়েই পাছলৈ 'ডিব্ৰুগড় হনুমানবক্স সুৰজমল কানৈ মহাবিদ্যালয়' হিচাপে খ্যাতি লাভ কৰে। পাছলৈ কানৈ বাণিজ্য আৰু মনোহাৰীদেৱী কানৈ মহিলা

মহাবিদ্যালয় গঢ় লৈ উঠে। উল্লেখনীয় যে মনোহাৰীদেৱী কানৈ মহিলা মহাবিদ্যালয় বৰ্তমানেও ডিব্ৰুগড় নগৰৰ মহিলাৰ একমাত্ৰ উচ্চশিক্ষাৰ শিক্ষানুষ্ঠান।

ডিব্ৰুগড়ৰ উপকণ্ঠত অৱস্থিত বৰপথাৰ অঞ্চলৰ প্ৰয়াত নন্দলাল বৰগোঁহাই আৰু কেইবাজনো নমস্য ব্যক্তিৰ আপ্ৰাণ চেষ্টাত ১৯৬৩ চনৰ ১৬ আগষ্টৰ দিনা ডিব্ৰুগড় নগৰৰ চতুৰ্থখন শিক্ষানুষ্ঠান 'ডিব্ৰুগড় কলেজ'এ প্ৰতিষ্ঠা লাভ কৰে। পাছলৈ 'ডিব্ৰু কলেজ' বা 'ডিব্ৰু মহাবিদ্যালয়' নামেৰে জনসমাজত খ্যাতি লাভ কৰা মহাবিদ্যালয়খনি আজিৰ তাৰিখ পৰ্যন্ত কলা, বাণিজ্য আৰু বিজ্ঞান — এই তিনিওটা শৈক্ষিক শাখা থকা ডিব্ৰুগড় নগৰৰ একমাত্ৰ উচ্চ শিক্ষাৰ শিক্ষানুষ্ঠান। তিনিওটা শৈক্ষিক শাখাৰে বিশাল বিদ্যায়তনিক পৰিক্ৰমাক সামৰি লোৱা মহাবিদ্যালয়খনিৰ প্ৰতিষ্ঠাৰ সময়খিনি বৰ কন্টকময় আছিল। কোনো স্থায়ী দাতা নথকা মহাবিদ্যালয়খনি সম্পূৰ্ণৰূপে ৰাইজৰ বৰঙনিৰ ওপৰতেই নিৰ্ভৰশীল আছিল আৰু এনে দুখময় অৱস্থাৰে আৰম্ভ কৰা শিক্ষানুষ্ঠানখনিয়ে ২০১২ বৰ্ষত গৌৰৱময় সোণালী জয়ন্তী বৰ্ষ সম্পূৰ্ণ কৰে। ইয়াক কেন্দ্ৰ কৰি বৰ্ষজোৱা উদযাপন কাৰ্যসূচী পালন কৰা হয়।

**১.০০ বিষয় বিশ্লেষণ ঃ**

**১.১ ডিব্ৰু মহাবিদ্যালয়ৰ শৈক্ষিক পৰিৱেশ ঃ**

প্ৰতিষ্ঠাকালৰেপৰা মহাবিদ্যালয়খনিয়ে প্ৰয়োজনীয় শ্ৰেণীকোঠা তথা অন্যান্য সামগ্ৰীৰ বাবে যথেষ্ট কষ্ট স্বীকাৰ কৰিবলগীয়া হৈছিল। তদুপৰি স্থায়ী শিক্ষকৰ সমস্যা আছিল আন এক গুৰুত্বপূৰ্ণ সমস্যা। কাৰণ মাহিলি বেতন দিবলৈ প্ৰয়োজনীয় পুঁজিৰ নাটনি আছিল। ইয়াৰ পাছতো মহাবিদ্যালয়খনিত বিৰাজ কৰিছিল এক শৈক্ষিক পৰিৱেশ। কাৰণ প্ৰতিষ্ঠাকালৰ প্ৰতিজন শিক্ষাগুৰুৱেই আছিল একো একোখন ক্ষেত্ৰৰ একো একোজন নামজ্বলা ব্যক্তি। তেওঁলোকৰ ব্যক্তিত্বই সকলোকে মোহিত কৰিছিল। বোধহয় এই সময়ৰেপৰাই আজিও বিৰাজ কৰা গুৰু-শিষ্যৰ মাজৰ মধুৰ সম্পৰ্ক গঢ় লোৱাৰ প্ৰৱণতা গঢ়ি উঠিছিল। এতিয়াও বৰ্তি থকা সহকৰ্মীৰ মাজৰ জ্যেষ্ঠ-কনিষ্ঠৰ ভেদভাৱহীনতা আৰু গুৰু-শিষ্যৰ মাজৰ মধুৰ সম্পৰ্ক আমাৰ মহাবিদ্যালয়ৰ লেখত ল'বলগীয়া এক মানসিক সম্পদ।

সাহিত্য-সংস্কৃতি, অৰ্থনীতি, ৰাজনীতি, বাণিজ্য, আইন আদি বিভিন্ন দিশত পাৰদৰ্শী নমস্য শিক্ষাগুৰুসকলৰ সান্নিধ্যই স্বাভাৱিকতে মহাবিদ্যালয়খনিত গঢ়ি তুলিছিল এক সুস্থ শৈক্ষিক পৰিৱেশ। তদুপৰি সেই সময়ৰ শিক্ষাৰ্থীসকলৰ কোনো কোনো আন বৃত্তিতো নিয়োজিত আছিল। ওপজা মাটিৰ পৰশ লগা সেই শিক্ষাৰ্থীসকলে মহাবিদ্যালয়খনিৰ শৈক্ষিক পৰিৱেশক প্ৰদান কৰিছিল অনন্য মাত্ৰা। আত্মপ্ৰতিষ্ঠাৰ সংগ্ৰামে শিক্ষাৰ্থীসকলক সংযমী হ'বলৈ কঠোৰ আহ্বান জনাইছিল। সেয়ে হয়তো প্ৰথম চাম শিক্ষাৰ্থীৰ অন্যতম প্ৰাক্তন শিক্ষাৰ্থী প্ৰিয়ৰাম বড়াই ডিব্ৰু মহাবিদ্যালয়ক 'ত্যাগৰ প্ৰতীক' বুলি অভিহিত কৰিছে।[১]

সময় সলনি হোৱাৰ লগে লগে শিক্ষা পদ্ধতিৰ সলনি হয় আৰু ইয়াৰ লগে লগে সলনি হয় শৈক্ষিক পৰিৱেশো। সমাজ-সভ্যতা যান্ত্ৰিক হৈ অহাৰ সমান্তৰালভাৱে মানুহৰ মনতো ইয়াৰ প্ৰতিক্ৰিয়া প্ৰকাশ পায়। সেয়ে সময়ৰ সৈতে খাপ খুৱাই আগবাঢ়োঁতে ডিব্ৰু মহাবিদ্যালয়ৰ শৈক্ষিক পৰিৱেশো সলনি হৈছে। সলনি হৈছে শৈক্ষিক পৰিমণ্ডল। আৰ্থিকভাৱে পিছপৰা পৰিয়াল তথা সমাজৰপৰা অহা শিক্ষাৰ্থীৰ বাবে ডিব্ৰু মহাবিদ্যালয় এতিয়াও ভূ-স্বৰ্গস্বৰূপ। উচ্চ শিক্ষাৰ সপোন দেখা অথচ আৰ্থিক অৱস্থাই সমৰ্থন নকৰা বহু শিক্ষাৰ্থীৰ বাবে ডিব্ৰু মহাবিদ্যালয়ৰ বাহিৰে গত্যন্তৰ নাই। এনে পৰিয়ালৰপৰা অহা অত্যন্ত মেধাবী আৰু তুলনামূলকভাৱে কম মেধাবী — দুয়ো প্ৰকৃতিৰ শিক্ষাৰ্থীক সামৰি গঢ় লৈ উঠিছে ডিব্ৰু মহাবিদ্যালয়ৰ শৈক্ষিক পৰিৱেশ। কম মেধাবী শিক্ষাৰ্থীয়েও এই শিক্ষানুষ্ঠানৰপৰা উৎকৃষ্ট ফলাফল লাভ কৰি জীৱন যুদ্ধত নিজকে প্ৰতিষ্ঠা কৰিছে।

সীমিত সা-সুবিধাৰ মাজতো আজিৰ শিক্ষাৰ্থীয়ে এই মহাবিদ্যালয়ৰপৰা আশানুৰূপ ফলাফল লাভ কৰিবলৈ সক্ষম হৈছে। চেমিষ্টাৰ চিষ্টেমত ভাল ফলাফল প্ৰদৰ্শন কৰিবলৈ সমৰ্থ হৈছে। কোনো শিক্ষানুষ্ঠানৰ ফলাফলৰ ক্ষেত্ৰত কিমান ভাল ফলাফল হৈছে তাক বিচাৰ-বিশ্লেষণ কৰাৰ সমান্তৰালভাৱে কোনো শিক্ষাৰ্থীয়ে মহাবিদ্যালয়খনিলৈ কিমান শতাংশ নম্বৰ লৈ আহিছিল আৰু শিক্ষা সাং কৰি যাবৰ পৰত কিমান শতাংশ নম্বৰলৈ ওলাই গৈছে তাক বিচাৰ কৰিলেহে আচল ছবিখন পোৱা যায়। এনেদৰে বিচাৰ কৰিলে ডিব্ৰু মহাবিদ্যালয়ৰ শিক্ষাৰ্থীৰ ফলাফলক ফেৰ মৰা শিক্ষাৰ্থী কমেইহে ওলাব।

**১.২ ডিব্ৰু মহাবিদ্যালয়ত সাহিত্য চৰ্চা ঃ**

ডিব্ৰু মহাবিদ্যালয়ৰ সাহিত্য চৰ্চাৰ দিশটো পুংখানুপুংখকৈ আলোচনা কৰিবলৈ হ'লে তলত দিয়াৰ দৰে বিভাজন কৰি ল'লে আলোচনা কৰিবলৈ সুবিধা হ'ব —

ক) গ্ৰন্থ-আলোচনীৰ জৰিয়তে সাহিত্য চৰ্চা

খ) প্ৰাচীৰ পত্ৰিকাৰ জৰিয়তে সাহিত্য চৰ্চা।

তলত সুকীয়া সুকীয়াকৈ আলোচনা আগবঢ়োৱা হ'ল —

**ক) গ্ৰন্থ-আলোচনীৰ জৰিয়তে সাহিত্য চৰ্চা ঃ** মহাবিদ্যালয় প্ৰতিষ্ঠাৰ পৰৱৰ্তী কালৰেপৰা সাহিত্য চৰ্চাৰ জগতখনত শিক্ষক-শিক্ষাৰ্থী উভয়ৰে মাজতে ব্যাপক উৎসাহ দেখিবলৈ পোৱা যায়। অসমীয়া বিভাগৰ নমস্য শিক্ষাগুৰু ৰজনী শৰ্মা আছিল এগৰাকী কলাৰ সাধক। নাট্য ৰচনাৰ দিশত বিস্তৰ জনপ্ৰিয়তা অৰ্জন কৰা প্ৰয়াত শৰ্মা ডাঙৰীয়াই ভালেসংখ্যক ৰচনা অসমীয়া সাহিত্যৰ জগতলৈ আগবঢ়াই গৈছে। পৰৱৰ্তী কালত সাহিত্য চৰ্চাৰ দিশটো সবল কৰি তুলিবলৈ 'সাহিত্য চ'ৰা' নামেৰে এটি অনুষ্ঠান গঢ়ি তোলা হৈছিল আৰু তেতিয়াৰেপৰা সাহিত্য-সংস্কৃতিৰ পথাৰখনলৈ নানা অৱদান আগবঢ়াই অহা হৈছে। অসমীয়া বিভাগৰ তৰফৰপৰা 'ব্যঞ্জনা' নামেৰে এখনি আলোচনী প্ৰকাশ কৰি অহা হৈছে। 'সংস্কৃত দিৱস'ৰ লগত সংগতি ৰাখি 'সংস্কৃত সংস্কৃতিঃ' শীৰ্ষক এখনি গৱেষণামূলক প্ৰবন্ধৰ গ্ৰন্থ প্ৰতিবছৰে প্ৰকাশ কৰি অহা হৈছে। আনন্দৰ বিষয় যে চলিত বৰ্ষত প্ৰকাশ পাবলগীয়া অষ্টম সংখ্যাটি ISSN সূচকেৰে প্ৰকাশ পাব। ইয়াৰ উপৰি 'গ্ৰন্থাগাৰ দিৱস'ক কেন্দ্ৰ কৰি প্ৰতিবছৰে 'গ্ৰন্থকুটি' নামেৰে গৱেষণামূলক গ্ৰন্থ এখনি নিয়মীয়াকৈ প্ৰকাশ কৰি অহা হৈছে। চলিত বৰ্ষত এই গ্ৰন্থখনিয়েও ISSN সূচকেৰে প্ৰকাশ পাব। মহাবিদ্যালয়ৰ প্ৰতিষ্ঠা দিৱসক আগত ৰাখি মহাবিদ্যালয়ৰ 'আভ্যন্তৰীণ মান নিশ্চিতকৰণ কোষ' (IQAC) এ প্ৰতিষ্ঠা দিৱসৰ

দিনা ‘খোজ’ নামেৰে এখনি গৱেষণামূলক পত্ৰিকা ISSN সূচক সহকাৰে প্ৰকাশ কৰি আহিছে। উল্লেখযোগ্য যে নিয়মীয়াকৈ প্ৰকাশ পাই অহা উল্লিখিত গ্ৰন্থ আৰু পত্ৰিকা কেইখনিয়ে মহাবিদ্যালয়ত কৰ্মৰত শিক্ষাগুৰুসকলৰ চিন্তা প্ৰকাশ কৰাৰ পথ সুগম কৰিছে আৰু লেখক-লেখিকাৰ এখনি শক্তিশালী মঞ্চ নিৰ্মাণত সফল হৈছে।

মহাবিদ্যালচয়ৰ গণিতশাস্ত্ৰ বিভাগ, পৰিসংখ্যা বিভাগ আৰু পৰিকলন বিজ্ঞান বিভাগৰ যৌথ উদ্যোগত গঢ় লৈ উঠিছিল Mathematical Society শীৰ্ষক এটি অনুষ্ঠানৰ। এই অনুষ্ঠানৰ মুখপত্ৰ হিচাবে প্ৰকাশ পাই আহিছে গৱেষণামূলক পত্ৰিকা Mathematica। নতুন নতুন চিন্তাৰ সমাহাৰ ঘটা এই গৱেষণা পত্ৰিকাখনিয়ে মহাবিদ্যালয়ৰ গণিত শাস্ত্ৰ সম্বন্ধীয় চৰ্চাত এক গুৰুত্বপূৰ্ণ ভূমিকা গ্ৰহণ কৰি আহিছে। তদুপৰি বাণিজ্য বিভাগৰপৰা প্ৰকাশ পাই আছে ‘বাণিজ্য প্ৰবাহ’ শীৰ্ষক এখন বাৰ্তালোচনী। বাণিজ্যৰ লগত জড়িত দিশসমূহৰ চিন্তা-চৰ্চাৰ বাবে প্ৰকাশিত এই আলোচনীয়ে মহাবিদ্যালয়ৰ সাহিত্য চৰ্চাৰ জগতখনক এক অনন্য মাত্ৰা প্ৰদান কৰিছে। হিন্দী বিভাগৰ অৱসৰপ্ৰাপ্ত মুৰব্বী অধ্যাপক ড° অলখ নিৰঞ্জন সহাইৰ আশাসুধীয়া প্ৰচেষ্টাৰ ফলত প্ৰকাশ পাইছিল বহুভাষিক নিউজ বুলেটিন ‘অন্তৰা’। অধুনালুপ্ত এই নিউজ বুলেটিনখনিয়েও মহাবিদ্যালয়ৰ সাহিত্য চৰ্চাৰ পথাৰখনলৈ অৱদান আগবঢ়াইছিল।

শিক্ষাৰ্থীসকলৰ চিন্তা-চৰ্চা আৰু বৌদ্ধিক উৎকৰ্ষ সাধনৰ বাবে ছাত্ৰ একতা সভাৰপৰা মুখপত্ৰ ‘ডিব্ৰুয়ান’ প্ৰতিবছৰে প্ৰকাশ পাই আহিছে। পঢ়াশলীয়া কালতে চিন্তা-চৰ্চাৰ জগতখনিত প্ৰৱেশ কৰাৰ পথ মসৃণ কৰা আলোচনীখনত ভিন্ন স্বাদৰ লেখা প্ৰকাশ কৰি অহা হৈছে। তদুপৰি শিক্ষক দিৱসৰ উপলক্ষ্যে অসমীয়া বিভাগৰ শিক্ষাৰ্থীসকলে নিয়মীয়াকৈ প্ৰকাশ কৰি আহিছে ‘কিৰণ’ নামেৰে এখনি হাতে লিখা আলোচনী। প্ৰাক্তন শিক্ষাৰ্থী সত্যজিৎ গগৈ আৰু জাহ্নবী বৰুৱা আছিল এই আলোচনীৰ প্ৰথম যুটীয়া সম্পাদক।

২০১৪ বৰ্ষৰ ২৯, ৩০ আৰু ৩১ জানুৱাৰী তাৰিখে মহা আড়ম্বৰেৰে মহাবিদ্যালয়ৰ সোণালী জয়ন্তী সামৰণি উৎসৱ পালন কৰা হৈছিল। এই অনুষ্ঠানৰ লগত সংগতি ৰাখি এলানি গ্ৰন্থ প্ৰকাশৰ পৰিকল্পনাক সঠিকভাৱে ৰূপায়ণ কৰা হয়। সোণালী জয়ন্তীৰ মুখপত্ৰ ‘স্বৰ্ণায়ণ’ প্ৰকাশ পায় অসমীয়া বিভাগৰ মুৰব্বী অধ্যাপক বীৰেন বৰুৱাৰ সম্পাদনাত। মহাবিদ্যালয়ৰ অতীতৰপৰা বৰ্তমানলৈ বিভিন্ন দিশৰ আলোচনা, অলেখ দুৰ্লভ তথ্য আৰু আলোকচিত্ৰ সন্নিবিষ্ট হোৱা গ্ৰন্থখনিত ভাৰত ৰত্ন তথা ভাৰত গণৰাষ্ট্ৰৰ প্ৰাক্তন ৰাষ্ট্ৰপতি এ.পি.জে. আব্দুল কালামৰ প্ৰকাশিত এটি মূল্যবান লেখাই গ্ৰন্থখনিৰ সোণত সুৱগা চৰায়। ইয়াৰ উপৰি সাম্প্ৰতিক বিজ্ঞান বিশ্বৰ প্ৰায় সকলো বিষয় সামৰি প্ৰকাশ পায় গৱেষণামূলক গ্ৰন্থ Science Galaxy। সম্পাদনাৰ গুৰু দায়িত্বত আছিল — চিন্তাশীল লেখিকাদ্বয় ক্ৰমে অধ্যাপিকা ৰূপজ্যোতি বড়া আৰু ড° জ্যোতিমা ফুকন। বুৰঞ্জী বিভাগৰ মুৰব্বী অধ্যাপিকা ড° বন্তি ফুকন সোনোৱালৰ সম্পাদনাত প্ৰকাশ পায় ‘বুৰঞ্জী এলাগী কিয়’ শীৰ্ষক আন এখনি গৱেষণামূলক গ্ৰন্থ। এলানি গৱেষণা আধাৰিত প্ৰবন্ধ সন্নিবিষ্ট হোৱা গ্ৰন্থখনি বুৰঞ্জী অধ্যয়নত এক বিশেষ সংযোজন। মহাবিদ্যালয়ৰ সংস্কৃত বিভাগৰ সহযোগী অধ্যাপিকা মধুমিতা গোস্বামী বৰঠাকুৰৰ সম্পাদনাত



প্ৰকাশ পায় এখনি মূল্যবান গ্ৰন্থ ‘প্ৰাচ্যবীক্ষা’। প্ৰাচ্য চিন্তা সম্পৰ্কীয় গ্ৰন্থখনিত ভালেকেইটা মূল্যবান গৱেষণা আধাৰিত প্ৰবন্ধ সন্নিবিষ্ট হৈছে। তদুপৰি মহাবিদ্যালয়ৰ প্ৰাক্তন শিক্ষাৰ্থী সংস্থাৰ তৰফৰপৰা ‘ডিব্ৰুজ্যোতি’ নামেৰে আন এখনি গ্ৰন্থ প্ৰকাশ কৰা হৈছিল। প্ৰাক্তন শিক্ষাৰ্থীৰ অনুভৱেৰে সিক্ত আলোচনীখনি দ্বৈতভাৱে সম্পাদনা কৰিছিল মানসজ্যোতি গগৈ আৰু দেবানন্দ চেলেঙে।

গৱেষণামূলক গ্ৰন্থৰ জৰিয়তে ডিব্ৰু মহাবিদ্যালয়ৰ সাহিত্য চৰ্চাৰ দিশত নৱতম সংযোজন হৈছে বিশুদ্ধ বিজ্ঞান আৰু সমাজ বিজ্ঞান আধাৰিত গৱেষণামূলক প্ৰবন্ধৰ সংকলন গ্ৰন্থ ‘মোজেইক’। মিতালী বৰুৱা আৰু ড° জ্যোতিমা ফুকনৰদ্বাৰা যুটীয়াভাৱে সম্পাদিত গ্ৰন্থখনি মহাবিদ্যালয়ৰ বৌদ্ধিক চিন্তা-চৰ্চাৰ অনুপম স্বাক্ষৰ।

**খ) প্ৰাচীৰ পত্ৰিকাৰ জৰিয়তে সাহিত্য চৰ্চা ঃ** মহাবিদ্যালয় পৰ্যায়ত সাহিত্য চৰ্চাৰ ক্ষেত্ৰত প্ৰাচীৰ পত্ৰিকাসমূহে এক অনবদ্য ভূমিকা পালন কৰে। সাহিত্য চৰ্চাৰ প্ৰাথমিক থলী হিচাপে পৰিচিত এই মাধ্যমৰ জৰিয়তে শিক্ষাৰ্থীৰ কলাত্মক জগতখনৰ পৰিচয় পোৱা যায়। নিজৰ মনলৈ অহা চিন্তা-চেতনাসমূহক বাংময় ৰূপ দিবলৈ যাওঁতেই প্ৰাচীৰ পত্ৰিকাসমূহে অনন্য মাত্ৰা লাভ কৰে।

ডিব্ৰু মহাবিদ্যালয়ৰ সাহিত্য চৰ্চাৰ জগতখনত প্ৰাচীৰ পত্ৰিকাই এক গুৰুত্বপূৰ্ণ মাধ্যম হিচাপে ধৰা দিছে। বিভিন্ন উপলক্ষ্যত শিক্ষাৰ্থীসকলে প্ৰাচীৰ পত্ৰিকাসমূহ প্ৰকাশ কৰি আহিছে। ইয়াৰ মাজেৰে প্ৰকাশ পাইছে শিক্ষাৰ্থীসকলৰ কলাত্মক চিন্তা-চেতনা আৰু মহাবিদ্যালয়খনিত উদ্‌যাপিত হৈ অহা বিভিন্ন উপলক্ষ্যৰ প্ৰতি দায়বদ্ধতা।

মহাবিদ্যালয়ৰ সংস্কৃত বিভাগৰ শিক্ষাৰ্থীসকলে প্ৰকাশ কৰি আহিছে ‘জ্ঞানাত্মা’ নামেৰে এখনি প্ৰাচীৰ পত্ৰিকা। জ্ঞান আৰু আত্মাৰ মধুৰ আলিংগনত জন্ম হোৱা প্ৰাচীৰ পত্ৰিকাখনিয়ে শিক্ষাৰ্থীৰ চিন্তা-চেতনা প্ৰকাশৰ বলিষ্ঠ মাধ্যমৰূপে স্বীকৃতি লাভ কৰিছে। মহাবিদ্যালয়ৰ অসমীয়া বিভাগে প্ৰকাশ কৰি আহিছে দুখনকৈ প্ৰাচীৰ পত্ৰিকা —‘জ্যোতিস্মান’ আৰু ‘ব্যঞ্জনা’। ‘প্ৰজ্ঞাৰ জ্যোতিত স্নান কৰা’— এই মধুৰ অৰ্থৰে আৱৰি থকা ‘জ্যোতিস্মান’ আৰু ‘ব্যঞ্জনা’ শীৰ্ষক প্ৰাচীৰ পত্ৰিকা দুখনিয়ে শিক্ষাৰ্থীসকলৰ চিন্তা-চৰ্চা বিকাশত প্ৰভুত পৰিমাণৰ বৰঙণি যোগাইছে। তদুপৰি ‘দৈনন্দিন’ নামেৰে নিতৌ প্ৰকাশ পোৱা এখনি প্ৰাচীৰ পত্ৰিকা এই বিভাগৰপৰা প্ৰকাশ পাই আহিছে আৰু ই অসমীয়া বিভাগৰ লগতে অন্যান্য বিভাগৰ শিক্ষাৰ্থীৰ বাবেও সাহিত্য চৰ্চাৰ উমৈহতীয়া মঞ্চ হৈ উঠিছে। অনুৰূপ ধৰণে প্ৰাণীবিজ্ঞান বিভাগৰপৰা প্ৰকাশ পাই আহিছে ‘জিনম’ নামেৰে এখনি বাচকবনীয়া প্ৰাচীৰ পত্ৰিকা। জিনম শব্দৰ অৰ্থ হৈছে — জিনৰ সমষ্টি। বিভিন্ন চৰিত্ৰৰ বাহক জিনৰ সমষ্টি ‘জিনম’এ বিজ্ঞান আৰু কলা চিন্তাৰ দুৱাৰখন উন্মুক্ত কৰি শিক্ষাৰ্থীসকলৰ উৎকৰ্ষ সাধনৰ পথ মসৃণ কৰি তুলিছে। জন্ম লগ্নত প্ৰাণীবিজ্ঞান বিভাগৰ এইপ্ৰাচীপ পত্ৰিকাৰ নাম ৰখা হৈছিল ‘ৰেটিনা’। ৰেটিনা এক প্ৰতীকী শব্দ যাৰ অন্তৰ্নিহিত অৰ্থ—দৃষ্টিপাত। মহাবিদ্যালয়ৰ পদাৰ্থবিজ্ঞান বিভাগৰপৰা প্ৰকাশ পাই আহিছে ‘ডি ম’শ্ব’ন’ নামৰ প্ৰাচীৰ পত্ৰিকাখনি। পত্ৰিকাখনিয়ে বিশুদ্ধ বিজ্ঞান শাখাৰ শিক্ষাৰ্থীসকলৰ বাবে সাহিত্য চৰ্চাৰ দুৱাৰ মুকলি কৰাৰ লগতে গতিময়তা প্ৰদান কৰিছে। উদ্ভিদবিজ্ঞান বিভাগৰ তৰফৰপৰা প্ৰকাশ পাই আহিছে এখনি বহুল পঠিত

প্ৰাচীৰ পত্ৰিকা। নাম 'সূৰ্যমুখী'। প্ৰাচীৰ পত্ৰিকাখনিয়ে সন্দেহাতীতভাৱে শিক্ষাৰ্থীসকলৰ চিন্তা-চৰ্চাক সূৰ্যমুখী কৰি তুলিছে। মহাবিদ্যালয়ৰ নৃতত্ত্ব বিভাগে নিয়মীয়াকৈ প্ৰকাশ কৰি আহিছে 'মানৱ' নামেৰে এখনি প্ৰাচীৰ পত্ৰিকা। মানুহৰ সম্পৰ্কে চিন্তা-চৰ্চা আৰু গৱেষণা ধাৰাবাহিকভাৱে চলি থকা বিভাগটোৰ শিক্ষাৰ্থীয়ে 'মানৱ'ক এক অনন্য মাত্ৰা প্ৰদান কৰি আহিছে। অনুৰূপ ধৰণে পৰিকলন বিজ্ঞান বিভাগে প্ৰকাশ কৰি আহিছে 'ভাস্কৰ' নামেৰে এখনি প্ৰাচীৰ পত্ৰিকা। মহাবিদ্যালয়ৰ সাহিত্য চৰ্চাৰ দিশত নতুন অৰুণ উদয় ঘটোৱাত এই পত্ৰিকাখনিৰ বিশেষ ভূমিকা আছে। মহাবিদ্যালয়ৰ গণিতশাস্ত্ৰ বিভাগ আৰু ৰাজনীতি বিজ্ঞান বিভাগে 'জ্যোতি' নামেৰে একোখনকৈ প্ৰাচীৰ পত্ৰিকা নিয়মীয়াকৈ প্ৰকাশ কৰি আহিছে। প্ৰাচীৰ পত্ৰিকাৰ নাম একে যদিও দৃষ্টিভংগী সুকীয়া। নিজা নিজা ক্ষেত্ৰত জ্যোতি বিলোৱাত প্ৰাচীৰ পত্ৰিকাখনিৰ গুৰুত্ব অপৰিসীম। আনহাতে ৰসায়ন বিজ্ঞান বিভাগে প্ৰকাশ কৰি আহিছে 'শিখা' নামেৰে এখনি প্ৰাচীৰ পত্ৰিকা। অধ্যয়নৰ বিষয়ৰ লগত ৰজিতা খুৱাই প্ৰকাশ লাভ কৰি অহা প্ৰাচীৰ পত্ৰিকাখনিয়ে শিক্ষাৰ্থীসকলৰ মাজত সাহিত্য চৰ্চা কৰাৰ এখনি সাৰুৱা মঞ্চ প্ৰদান কৰি আহিছে। ছাত্ৰ একতা সভাৰ তৰফৰপৰাও এখনি প্ৰাচীৰ পত্ৰিকা প্ৰকাশ কৰি অহা হৈছে। নাম — জাগ্ৰত। নিয়মীয়াকৈ প্ৰকাশ লাভ কৰি অহা প্ৰাচীৰ পত্ৰিকাখনি মহাবিদ্যালয়খনিৰ শিক্ষাৰ্থীৰ বাবে সাহিত্য চৰ্চাৰ এখনি উমৈহতীয়া ক্ষেত্ৰ।

**২.০০ উপসংহাৰ ঃ**

শেহতীয়াভাৱে মহাবিদ্যালয়খনিৰ শৈক্ষিক পৰিৱেশ আৰু সাহিত্য চৰ্চাৰ এক অনুকূল পৰিৱেশৰ সৃষ্টি হৈছে। কলা, বাণিজ্য আৰু বিজ্ঞান — তিনিওটা শৈক্ষিক শাখাতে সৃষ্টি বিৰাজমান। মহাবিদ্যালয় কৰ্তৃপক্ষৰ সহযোগিতা, ও সদিচ্ছা আৰু শিক্ষাৰ্থীসকলৰ সুস্থ মানসিকতাই এই পৰিৱেশৰ বাবে যাৱতীয় ইন্ধন যোগাইছে। মৌলিক ৰচনা, গৱেষণামূলক চিন্তা-চৰ্চাৰ এটা বলিষ্ঠ বাতাবৰণ গঠিত হৈছে। এনে অনুকূল পৰিৱেশে মহাবিদ্যালয়খনিলৈ অনাগত দিনবোৰত সৰহ পৰিমাণে সমৃদ্ধিৰ বতৰা কঢ়িয়াই আনিব বুলি আশা কৰা হৈছে।

**মৌখিকভাৱে তথ্য প্ৰদান কৰা ব্যক্তিসকল ঃ**

১. প্ৰদীপ চেতিয়া ফুকন।
২. মহেশ কুমাৰ জৈন।
৩. মধুমিতা গোস্বামী বৰঠাকুৰ।
৪. অদিতি বৰুৱা।

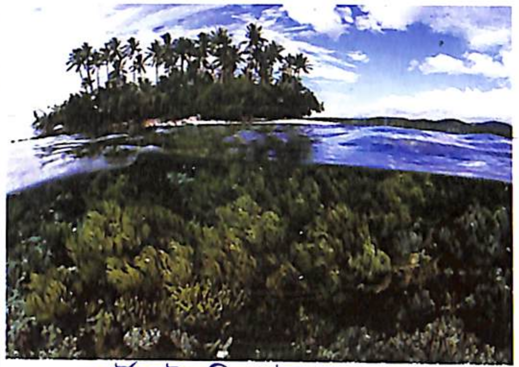
■■

তথ্যসূত্ৰ ঃ

১. মানসজ্যোতি গগৈ, দেবানন্দ চেলেং ঃ **ডিব্ৰুজ্যোতি**, *প্ৰিয়ৰাম বড়া ঃ ডিব্ৰু কলেজ তোমাক নমস্কাৰ*, প্ৰাক্তন শিক্ষাৰ্থী সংস্থা, সোণালী জয়ন্তী উদযাপন সমিতি, ডিব্ৰু মহাবিদ্যালয়, ডিব্ৰুগড়, জানুৱাৰী, ২০১৪।



**চন্দ্ৰগুপ্ত বৰা আৰু ৰূপজ্যোতি বৰাৰ 'বিপন্ন বিশ্বপৰিৱেশ আৰু প্ৰাকৃতিক প্ৰত্যাখ্যান' শীৰ্ষক প্ৰবন্ধ সম্পৰ্কীয় সংগৃহীত ছবি**


কাৰ্টাৰেটৰ চিৰসেউজ আৱেশ


সমুদ্ৰৰ জলৰাশিয়ে প্লাৱিত কৰা কাৰ্টাৰেটৰ কৃষিভূমি


কাৰ্টাৰেটৰ নান্দনিক ৰূপ


সৰ্বহাৰা কাৰ্টাৰেটবাসীৰ নাতিদূৰৈত আশ্ৰয়ৰ সন্ধান


লুণীয়া পানীয়ে মৰুভূমিলৈ ৰূপান্তৰ কৰা কাৰ্টাৰেটৰ কৃষিভূমি

*Photo source : Google image*


প্ৰাকৃতিক প্ৰত্যাখ্যানৰ কবলত কাৰ্টাৰেট দ্বীপ