BIODIVERSITY LOSS AS HARBINGER OF ENVIRONMENTAL HAZARDS

BY

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a. Direct drivers of biodiversity loss

The most important direct drivers of biodiversity loss which have either remain constant or on the increase are:

i. Habitat change (land use change, physical modification of rivers or water withdrawal from rivers, loss of coral reefs and damage to sea floors due to trawling.

ii. Climate change

iii. Introduction of invasive alien species

iv. Over-exploitation

v. Pollution

**Habitat transformation, particularly from conversion to agriculture.** Cultivated systems (areas where at least 30% of the landscape is in croplands, shifting cultivation, confined livestock production, or freshwater aquaculture) now cover one quarter of Earth’s terrestrial surface. Under the Millenium Ecosystem
Assessment scenarios, a further 10–20% of grassland and forestland is projected to be converted by 2050 (primarily to agriculture). While the expansion of agriculture and its increased productivity is a success story of enhanced production of one key ecosystem service, this success has come at high and growing costs in terms of trade-offs with other ecosystem services, both through the direct impact of land cover change and as a result of release of nutrients into rivers and water withdrawals for irrigation (globally, roughly 15–35% of such irrigation withdrawals are estimated to be unsustainable (low to medium certainty). Habitat loss also occurs in coastal and marine systems, though these transformations are less well documented. Trawling of the seabed, for instance, can significantly reduce the diversity of benthic habitats, while destructive fishing and coastal development can lead to losses of coral reefs.
Although extinction is a natural phenomenon, it occurs at a natural “background” rate of about one to five species per year. Scientists estimate we’re now losing species at 1,000 to 10,000 times the background rate, with literally dozens going extinct every day. For marine systems, the dominant direct driver of change globally has been overfishing. Demand for fish as food for people and as feed for aquaculture production is increasing, resulting in increased risk of major, long-lasting collapses of regional marine fisheries. Over much of the world the biomass of fish targeted in fisheries (including that of both the target species and those caught incidentally) has been reduced by 90% relative to levels prior to the onset of industrial fishing. About three quarters (75%) of the world’s commercial marine fisheries are either fully exploited (50%) or overexploited (25%).