# 5. Using Biodiversity Indicators to Help Set Priorities

Indicators can help planners to set priorities for biodiversity conservation. The types of indicators used will vary depending on the scale of the decisionmaking: whether it is at the project level or for national or global planning. Because of data quality limitations, indicators listed here are most useful for planning. They would need to be supplemented with much more detailed, site-specific, management and economic information if used to set priorities or to make specific decisions for protection.

Decisions about resource allocation can range from choosing which conservation project to support, given limited funds, staff, and material, to land-use decisions, which entail trade-offs between preservation and development needs. Planners require measures of biodiversity for both types of decision: for relative comparison (different projects and sites) and to quantify what exists in a given locale.

The designation of new protected areas provides an example of how indicators can be used to set conservation priorities. One approach to conserving diversity is to identify "hot spots" and to protect those areas with the greatest diversity. The indicators required include: species richness (indicator 1), which serves as a good measure of diversity, and species endemism (indicator 5) which is important when choosing sites of global concern. The degree of threat that an area is under can be gauged indirectly by comparing the numbers of species threatened with extirpation (indicator 3) and species with stable, increasing, or decreasing populations (indicators 7 and 8). From a global perspective, policymakers would consider the numbers of species threatened with extinction (indicator 2).

A second example of indicator use entails protecting representative samples of habitat. The percent of each community type dominated by nondomesticated species (indicator 14) can guide planners in determining what is underrepresented in an existing protected areas system. This indicator can be analyzed along with the indicators used to determine "hot spots" and the measures of community types most threatened (indicators 14 and 15) which then can determine the remaining area and the rate of conversion to dominance by domesticated species. The Species Risk Index (indicator 6) can be used to take endemism into account. The planner also should consider whether new sites meet local needs in terms of the ecological services provided and whether local economies are dependent on the species present. The species used by local residents (indicator 13)

would provide a measure of this. The planner also might modify boundaries to conserve "econgeners" better; that is, wild relatives of economically important species.

The criteria used in biodiversity planning, such as in the example above of establishing new protected areas, will differ depending on the perspective and the needs of the individual making policy decisions. From a national standpoint, the bottom line of a country's biodiversity policies should be to maintain the species of local importance and the integrity of national ecosystems. Nevertheless, numerous policy considerations could change the weight that a national government gives to the various indicators involved in setting priorities. Countries with important genetic resources related to existing domesticated varieties may wish to concentrate their investment in the conservation of these species and thus will place heavy weight on the "econgener" rating. Countries wishing to develop industries based on the exploration of their biodiversity for useful chemical compounds may focus more on species richness.

The criteria used by international nongovernmental organizations (NGOs) in setting biodiversity conservation priorities tend to differ from those of governments. For instance, many NGOs target their activities toward conserving the maximum number of species or, in some cases, the well-known birds, plants, or primates. Given the objective of conserving maximum species richness, countries are ranked in their order of importance from a conservation standpoint in terms of species richness and endemism. Then, investments are then allocated among countries to match roughly either the number of species in the country or the ranking of an index like the Species Risk Index described above.

On the other hand, if the NGOs are oriented more toward development, they likely would focus greater attention on conserving species and habitats that can be managed and conserved for sustained income generation by local residents. As a result, they probably would spend funds in accordance with the degree of local participation, the number of "econgeners," other measures of species richness, and other community-based social and economic goals.

An international assessment of conservation priorities by intergovernmental organizations, such as the United Nations, the multilateral development banks, bilateral development agencies, or the World Conservation Union (IUCN), might identify certain habitats in one country as being in need of added protection because of the high fraction of threatened species in those habitats that are of importance to the local people in the region. Such an international designation could be used by the country as leverage for obtaining bilateral or multilateral support to meet conservation needs in the designated area. Consequently, the country would be able to shift more of its own resources to the other sites within its borders that have been identified as priority conservation areas.

Clearly, priorities for biodiversity conservation have to be worked out at community, national, regional, and global levels. Indicators can play an important role in determining these priorities and in monitoring the impact and effectiveness of subsequent conservation policies.

**Walter V. Reid** is an ecologist and Vice President for Program at WRI.

**Jeffrey A. McNeely** is Chief Biodiversity Officer of the World Conservation Union (IUCN), Gland Switzerland.

**Daniel B. Tunstall** is Senior Associate in WRI's Resource and Environmental Information Program. He also directs the Natural Resource Information program in WRI's Center for International Development and Environment.

**Dirk A. Bryant** is Research Analyst in WRI's Resource and Environmental Information Program.

**Manuel Winograd** is Director of the Ecological Systems Analysis Group (GASE), Bariloche, Argentina and Visiting Fellow at WRI.