STATEMENT OF THE POSITION OF THE
IOWA ACADEMY OF SCIENCE ON BIODIVERSITY

April 1997

The economic, aesthetic, and physical well-being of Iowans depend upon a great number of living species. There are about 1.4 million species of organisms that have been described worldwide, but biologists estimate the total number may be in the tens of millions. Life has come to occupy the many varied spaces on, above, and below the surface the constantly changing earth in a plethora of living systems that function by the many different kinds of organisms performing the tasks of fixing the energy of sunlight and then distributing energy and recycling nutrients within a complex web of existence. This wealth of living species has come to be known as biodiverstiy.

Biodiversity is important to each of us. Ecosystems function because many species, from bacterial to the large plants and animals, play interrelated and complex roles. Just how many species are needed to keep the world's ecosystems functioning is unknown. One biologist compared the number of species to rivets in an airplane wing and then ask how many of those rivets could be removed before the wing comes apart and the plane crashes. Surely not every one of the rivets is immediately necessary, but how many might the wing lose before the passengers have reason to become concerned? Species are becoming extinct, both locally and globally, as humans destroy natural habitat through activities such as human settlement, forest clearing, agriculture, pollution, and the introduction of pests and diseases. Not only are some well-publicized species extinct or in danger of extinction, many more less-obvious ones face a similar fate. We know that species are disappearing before they can be studied. Some of those species in danger of extinction may play keystone roles in their ecosystems. We do not know how may species can be lost before the vital interests of humans are endangered.

The Iowa Academy of Science supports the defense of biodiversity in three ways:
1) advancing a public policy that protects and enhances the diversity of natural habitats in the State of Iowa, 2) enhancing education at all levels and venues to inform and enlighten the citizens of Iowa to the importance of biodiversity in their economic, aesthetic and physical well-being, and 3) encouraging scientific research into aspects of biodiversity.

The greatest threat to the existence of many species is through the physical destruction of degradation of their habitats. Most of the natural habitat of Iowa has been transformed, but remnants of native populations remain. Public policies and laws should protect and enhance existing bits of native habitat and native populations, should reduce all kinds of human-made pollution, and should avoid the introduction of exotic species that may introduce diseases or displace native species. Policies should also encourage existence and enhancement of biodiversity in those settings that are not natural habitats but which can support a rich assemblage of species in conjunction with other uses of the land, including agriculture, forestry, and human habitation.

The appreciation of biodiversity and awareness of why it should be preserved, for most people, is endangered only through education. The Iowa Academy of Science supports education concerning all aspects of biodiversity at all levels in public and private schools and colleges and universities. Non-formal education programs for the general citizenry are also strongly encouraged. Biologic field experiences and field-oriented education cannot be replaced with substitutes.

Not only are there new species within well-established groups being discovered at impressive rates, but major groups, higher taxa, are also being discovered. We are a long way from understanding the role carious species play in ecosystems, including their role in the soil of our farms. The Iowa Academy of Science urges funding agencies, universities, and individual investigators to give priority to this important area of science.

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