Ecologists plan 22 studies of endangered species

When President Nixon and Soviet President Nikolai Podgorny signed the first Soviet-American environmental protection agreement last May (SN: 6/3/72, p. 358) some scientists wondered whether the agreement would produce only further talk or substantive action. The answer came last week as a group of Russian and American scientists met in Moscow and quickly succeeded in setting up an ambitious program of 22 joint projects, aimed at studying and preserving endangered species in the two countries.

Six of the projects involve studies of marine mammals, including whales, walrus and seals. The first of these projects will begin in April when a Russian scientist joins a team of American researchers under Scott McVay to study migration of bowhead whales between Alaskan and Siberian shores. Until now, McVay has been unable to determine the bowhead's activities during the Russian part of its migration so, after exchanging data with his Soviet counterpart, McVay hopes the team can conduct joint observations throughout the Bering Sea.

The other marine mammal project involving exchange of scientists this year will begin this summer when a team of Russian investigators comes aboard the research vessel Alpha Helix of the Scripps Institution of Oceanography for joint study of seals and whales.

The nine projects involving terrestrial animals reflect even more the common problems and experiences of conservationists in the two countries. A study of wolves, for example, was prompted by common management problems involving heated arguments in both countries between groups seeking total extermination of the animals, and conservationists who see wolves as necessary predators. In some northern regions wolves have become an endangered species, leading to a local overabundance of deer. The result has been extensive damage to forests through bark stripping. The Moscow negotiators expressed their hope that a joint treaty protecting such endangered animal species could be worked out before this fall.

Although the United States has actively sought national preservation of endangered animals for sometime, no similar protection has been offered to endangered plant species. The seven projects set up in the Moscow conference involving plant studies may help change that situation. These projects will begin with exchange of information and plant specimens and then may move toward establishment of common gene pools of endangered plants to enable recultivation.

Although the only animal species that the United States and the Soviet Union may have in common is the polar bear, the ecological systems of the two countries are quite similar, varying from deserts and southern temperate zones to great forests of the isolated north. "The two nations have remarkably similar ecological conditions," says Lee Talbot of the White House Council on Environmental Quality, a leading negotiator at the Moscow conference. "Experience on both sides can be shared to mutual benefit."

"In many ways this meeting was a test case to see whether the environmental protection agreement would result in concrete, productive projects or just talk," Talbot told SCIENCE NEWS. "And the meeting has indeed produced a large series of concrete projects which I think indicate the Soviets are as anxious as we are to make this truly cooperative and a real success. From the point of view of later working groups, it will be a hard act to follow."

During the next few months, 15 or more working groups like the one in Moscow will meet to plan courses of action in other environment-related areas covered by last year's treaty, including air and water pollution, urban problems and pesticide control. American agriculturists are particularly anxious to learn more about successful Soviet experiments in controlling insects without chemicals. In these experiments, scientists have reportedly built artificial nests for birds and bats to encourage their habitation in selected areas where they will feed on insects. □

U. of Chicago

Potts shows cross-sections of optic nerve. The more detailed section is left.

A window on the human optic nerve

Scientists have tried for more than a century to learn how many nerve fibers there are in the human optic nerve. The nerve transmits visual signals from receptor cells in the eye to the brain. Now Albert M. Potts, a University of Chicago ophthalmologist and his associates at the university and at the Argonne National Laboratory have counted the fibers. There are 1.2 million.

They fed some 500 individual photographs that together make up a visual scan of the optic nerve into an automatic image processor at Argonne. The processor took eight hours to come up with the answer. It also gave the exact diameter of each of the fibers and measured how many of them occupy a given area in the photographs.

The data and photographs from the processor have provided Potts and his colleagues with new information on how glaucoma and other diseases affect optic nerve fibers. Glaucoma, for example, first kills the larger fibers in the periphery of the visual field. Multiple sclerosis and wood alcohol poisoning attack the smaller fibers from the central part of the visual field. The data and photographs have also told them things about the receptor cells in the eye. For example, if a receptor cell is damaged, the nerve fiber connecting it to the brain will die within several weeks. Dead fibers appear in cross-section photomicrographs of the optic nerve as vacant spots in a cluster of tiny, varied-sized circles.