

Conservation of the Large, Economically Important River Turtle *Dermatemys mawii* in Belize

The Central American river turtle *Dermatemys mawii* is a large, highly aquatic, herbivorous, freshwater turtle of the Atlantic drainages of southern Mexico, Belize, and Guatemala (Alvarez del Toro et al. 1979; Iverson 1986; Iverson & Mittermeier 1980). It is the monotypic representative of the formerly widespread and diverse family, Dermatemydidae, which dates from the Jurassic of Europe and the Cretaceous of North America, Europe, and East Asia (Hutchison & Bramble 1981; Iverson & Mittermeier 1980; Romer 1956). Throughout its restricted range *Dermatemys* is intensely persecuted for its meat (Alvarez del Toro et al. 1979; Holman 1964; Lee 1969; Mittermeier 1970, 1971; Moll 1986) which is consumed by rural people and sold in urban markets. Because *Dermatemys* lays its eggs in scattered locations during high water periods of the late rainy season, exploitation of nesting females and their eggs is inconsequential (Polisar 1992). Years of unrestrained exploitation have caused regional and international concern about the status of *Dermatemys*, and it is listed in Appendix II of the Convention on International Trade in Endangered Species of Wild Flora and Fauna (Convention on International Trade in Endangered Species

1984), as endangered under the provisions of the U.S. Endangered Species Act (Code of Federal Regulations 1987), and as a high priority species in the World Conservation Union (IUCN) Species Survival Commission Action Plan for the Conservation of Tortoises and Freshwater Turtles (IUCN 1991).

Hunting has virtually eliminated *Dermatemys* from much of its former range in southern Mexico (Vogt & Flores-Villela 1992), and the status of the species in Guatemala is unclear. As late as 1984 *Dermatemys* was common to abundant in sparsely populated areas of Belize, but declining where accessible to a harvesting public (Moll 1986). Moll (1986) urged that the remaining relatively intact populations in Belize offered an opportunity to obtain the biological data needed to manage this important species.

That opportunity was seized when the seven villages of the Community Baboon Sanctuary, a grassroots wildlands management project that maintains riparian forest habitat for black howler monkeys (*Alouatta pigra*) (Horwich 1986, 1990; Horwich & Lyon 1988) invited Polisar to initiate research on *Dermatemys* in the 32 km of the Belize River that bisects their sanctuary. The invitation stemmed from concern that lo-

cal levels of harvest had become unsustainable. The field research began in late 1989 and expanded rapidly, eventually including an additional 54 km of the Belize River, 39 km of its tributary systems, 5 additional villages, urban market counts, and fieldwork in the Rio Bravo Conservation and Management Area and the Crooked Tree Wildlife Sanctuary. The focal points of the two-year study were reproductive biology and exploitation patterns. Extended, immersed residence in the villages provided an understanding of local perspectives, needs, and customs. Local acceptance of the research, which was critical to the success of the project, benefited from a completely local staff and a nonjudgmental acceptance of local attitudes toward wildlife. The abundance of local cooperation greatly enhanced the collection of data on reproductive cycles, minimum sizes at maturity, nesting and mating seasons, incubation periods, and seasonality, scale, and effects of exploitation.

Although exploitation occurred year-round it peaked during the last two months of the dry season, April and May, when low water levels enhanced ease of capture. In northern Belize there was a strong tradition of eating *Dermatemys* (locally called

hickatee) for the Easter dinner in April. The three methods of hunting (harpoons, nets, and freediving) selected for larger size classes. The data showed that repetitious intense hunting within an area not only resulted in decreased densities, but also in lower proportions of adults, particularly adult females. When the small juveniles that had previously eluded capture matured, they too were collected, providing an illusion of continued abundance in populations that were actually nonproductive and in decline. These dynamics appeared less severe in lightly and intermittently exploited populations. The status of the central Belize River population in the vicinity of the Community Baboon Sanctuary, and that of other heavily exploited populations, indicated that a more conservative level of harvest was necessary.

The ultimate objective of the project was to synthesize information on reproductive biology, exploitation patterns, marketing patterns, cultural traditions, and legal and community conservation opportunities, in order to develop pragmatic management recommendations that could function in a rural undeveloped setting that possessed only minimal wildlife law enforcement. Following the analysis, those recommendations were delivered to Belize in the form of a 195-page comprehensive report, a 9-page illustrated project summary, slide presentations (in government and nongovernment offices and village community centers), radio interviews, and many meetings and discussions.

In this country of low human population density, and in the absence of strong enforcement capabilities, restricting the activities of commercial hunters who removed large numbers for profit seemed a feasible initial strategy. Nets and diving tended to result in the removal of larger numbers of animals. Both methods tended to be used for commercial hunting. Although there were numerically more people oc-

asionally harpooning turtles for personal consumption, they were removing fewer turtles. However, there were divers and net men whose take was quite reasonable, making method restrictions inappropriate. A complete ban would have been inoperable because noncompliance would be universal. In contrast, a harvest strategy that emphasized the reduction of large-scale removals for profit stood some chance of obtaining public support. By allowing the continuation of small-scale removals by subsistence hunters, the support of that numerically large constituency might be maintained. It was also essential to recommend some completely closed zones. These zones could provide insurance should harvest management prove unwieldy, and also have the potential of serving as natural restocking zones.

Some villages were interested in *Dermatemys* conservation, while others were not. Some hunters and villages wanted mechanisms that would enable them to stop what they considered to be excessive and wasteful levels of hunting during the dry season. One example, the village of Freetown Sibun, was interested in establishing legal restrictions for their section of the Sibun River. They were concerned about the decline of turtles in their section of the river and resentful of nonresident market hunters who were removing turtles to sell elsewhere. The village possessed strong leadership and was already close to consensus. Other villages expressed the same concerns, but were less well organized. Polisar worked closely with Freetown Sibun, and the village developed a request for local regulations that was submitted to the Ministry of Natural Resources. That document was taken into consideration, as were Polisar's recommendations for the remainder of northern Belize, when the Belize Fisheries Department drafted nationwide comprehensive legislation protecting and managing *Dermatemys*

mawii in April of 1993 (Statutory Instrument No. 55 of 1993).

This new legislation includes year-round possession limits (which eliminate large-scale removals without negatively affecting small-scale use), a short closed season (May 1–31), a complete prohibition on selling and purchasing *Dermatemys*, and a series of protected zones in the major waterways of northern Belize. The protected zones are the entire Rio Bravo system, Cox and Mucklehany Lagoons, Northern and Southern Lagoons (the Manatee Lagoons), and sections of the Belize River, New River Lagoon, and the lower Sibun River. These areas include large and small whitewater rivers, darkwater lagoons, a large clearwater lagoon, brackish lagoons, and an estuary. Although it is too early to evaluate the success of these new measures, they represent a significant step forward in diverting the fate of this unique turtle away from extinction. Local compliance, the status of the *Dermatemys* populations, and any needs for further fine-tuning of the regulations will have to be monitored over time.

Acknowledgments

This research was funded by the New York Zoological Society–The Wildlife Conservation Society, Chelonia Institute, Programme for Belize, Lincoln Park Zoo, Institute for Food and Agricultural Sciences (IFAS), International Programs and the Program for Studies in Tropical Conservation at the University of Florida, Manomet Bird Observatory, and Sigma Xi. Support for follow-through work came from the Chelonia Institute, Crystal Channel Foundation, Fossil Rim Foundation, and the Tropical Conservation and Development Program at the University of Florida. Logistical support can be credited to the Community Baboon Sanctuary, Belize Audubon Society, Belize Center for Environmental Studies, Chau Hiix Lodge, Belize Meteorological Service and Hydrol-

ogy Department, Lighthawk, and British Forces Belize. The Belize Forestry and Fisheries Departments issued numerous research permits and assimilated the resulting deluge of information.

Peter C. H. Pritchard, Archie Carr III, Dave Collins, John Behler, Michael Klemens, the Chelonia Advisory Group of the American Association of Zoological Parks and Aquariums, and the Tortoise and Freshwater Turtle Specialist Group of the Species Survival Commission of IUCN—The World Conservation Union helped keep it going. Scientific advice was provided by Justin D. Congdon, Michael W. Ewert, John B. Iverson, Karen Bjorndahl, Don Moll, James Perran Ross, and Richard C. Vogt. F. Wayne King, Louis J. Guillette, Jr., John F. Eisenberg, and Franklin Percival supervised Polisar's thesis, around which the whole project revolved. Special gratitude goes to over 75 residents of the villages of rural northern Belize. The significant contributors among them are too numerous to credit individually, but without their cooperation and assistance the project simply would not have been possible.

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ANNOUNCEMENTS

New Conservation Program in Rio

The Universidade Federal Fluminense, in the city of Niteroi, Rio de Janeiro, Brazil, recently created its Center for Wild Animal Studies. It will operate under the Dean of Research and Graduate Studies in the Veterinary Faculty of the University. The center will support research and training with emphasis on conservation of biodiversity. The director of the program is Professor Milton Thiago de Mello.

David Western to Replace Richard Leakey as Kenya Wildlife Service Head

On March 30, 1994, David Western was named to succeed Richard Leakey as Director of the Kenya Wildlife Service. For the last 20 years, from his base in Nairobi, Dr. Western has worked for the Wildlife Conservation Society, most recently as its Director for Strategic Planning. From 1987 to 1990 Western also served as Chairman of the African Elephant and Rhino Specialist Group and was founding chairman of the Ivory Trade Review Group, which produced the first comprehensive study of the role of domestic and

foreign ivory markets in the dramatic decline of the elephant. In both roles he was a driving force behind the 1989 Convention on International Trade in Endangered Species (CITES) ban on the international ivory trade. Western was born in Tanganyika in 1944 but has been a citizen of Kenya since 1962. A grasslands ecologist by training, he played a central role in the creation of Amboseli National Park in 1974. Western has continued to monitor ecological and socioeconomic conditions in and around Amboseli since then. However, he has also served as a spokesman for conservation of wildlife beyond reserves and has organized several conferences and workshops to discuss new solutions for wildlife conservation that reflect human coexistence. He serves on the Board of the Liz Claiborne/Art Ortenberg Foundation and has published more than 100 popular and scientific articles.

Western's appointment ended months of uncertainty following Leakey's resignation from the post in January. The resignation came after allegations of corruption, racism, and mismanagement were leveled by a group headed by Leakey's former boss, Tourism and Wildlife Minister Noah Katana Ngala. Leakey denied wrongdoing and claimed to be caught in the middle of a political battle about the money and power in Kenya's wildlife reserves. While Leakey was widely hailed earlier for his success in restoring order and integrity to the Wildlife Service and for attracting major international support for wildlife conservation, local landowners living in and around protected areas were at times angered by some of his actions over the past four years, which served to undermine his national support.

Western is expected to continue many of Leakey's programs while strengthening local community involvement in conservation efforts. (Source: Wildlife Conservation Society, Conservation Digest)

Community-Based Conservation

Many meetings over the years have focussed on parks and protected area management. Many major donors have made large grants to set aside protected areas in the hope that they would remain "pristine." Yet around the world protected areas are in jeopardy as resentful local people express their alienation from protectionism and wildlife numbers continue to plummet. The view is growing that there is a need for different kinds of conservation projects and different kinds of relationships among donors, international implementing organizations, and community-based organizations. In October, 1993, the Liz Claiborne/Art Ortenberg Foundation, as "a proxy for the donor community as a whole," convened a group of about 60 people, including tribal leaders, village organizers, regional activists, government officials, field biologists, anthropologists, and representatives of public and private donor organizations. The group gathered to discuss the challenges of conservation of biological diversity and alleviation of human poverty in the rural landscape as a single, interrelated issue. The group sought to identify ways to make local communities of people the beneficiaries and custodians of conservation efforts and to make use of a series of case studies and analytical papers that had been commissioned in advance.

Several points of consensus emerged, including the recommendation that donors take the risky and uncomfortable step of loosening control over project design, time frame, and criteria for success. The participants also noted the need for site-specific, small-scale solutions, fitted to local situations, with no presumption of their large-scale duplicability. Improved communication networks, more education and technical training for local people, local institution-building, and multi-lingual sharing of technical information are other goals. The conference

proceedings, including the source material for discussions, are in press, with David Western and Michael Wright, editors, and Shirley Strum, associate editor. (Source: Liz Claiborne/Art Ortenberg Foundation)

Pig-Tailed Macaques and AIDS Research

The prospect of pig-tailed macaques (*Macaca nemestrina*) as a new animal model for AIDS has caused a drastic increase in imports into the U.S. of this species from Indonesia. Wild populations already have been shrinking significantly over the past decade as a result of habitat damage and hunting. Although the export of pig-tailed macaques is supposed to be limited, almost 1200 were received in the United States in 1992. This is an enormous increase from the 200-300 macaques that were imported for research each year in the mid-1980s, and it is twice the exportation limit set by the Indonesian government and CITES. The increase in demand for the Indonesian macaques is a direct result of reports by a group of researchers that they had infected pig-tailed macaques with HIV-1, and that the animals had developed antibodies to the virus (Journal of the National Institutes of Health Research, June 1992: 42.). The utility of pig-tailed monkeys as an animal model for the AIDS virus is still being debated, however. (Source: Journal of Research, June 1993).

Bald Eagle Down listed from Endangered to Threatened

Once estimated at a population of 417 nesting pairs, the Bald Eagle has been downlisted from the Endangered Species list by the U.S. Fish and Wildlife Service as of the first quarter of 1994. It will be designated a threatened species. Since the U.S. Environmental Protection Agency's ban on DDT use in 1972, eagle populations have grown to an estimated 4000 nesting pairs in 1992.

The Bald Eagle has always been a

powerful symbol for the U.S. and for environmental causes. Recently, in Placerville, California, an Eagle was killed as a symbolic act in what was termed as "just the beginning" of a war against environmentalists. The eagle was found shot, with its feet bound by nylon cord, hanging from a parking garage. A note was delivered to a local newspaper, the *Mountain Democrat*, boasting of the act. (Source: Conservation Digest)

Yucatan Peninsula Coastal Wetlands Inventory

In March, 1994, a commission of the tripartite (Mexico, Canada, and the U.S.) North American Wetlands Council authorized a year-long natural inventory of Yucatan's coastal wetlands to detect changes in the environment and potential impacts on coastal ecosystems. The council selected the nongovernmental organization Pronatura Peninsula de Yucatan, A.C. (PPY) and the Centro de Investigaciones y Estudios Avanzados del IPN-Merida (Cinvestav) to carry out the inventory, which will establish a permanent environmental monitoring and data analysis system and will collect the results of field research into a biodiversity data center.

Scheduled to begin in June, the inventory will cover some 1.7 million acres of coastal wetlands. The major goals of the project will be to identify and monitor resources of biological significance throughout the coastal zone and to detect changes in the socioeconomic and natural environments that may indicate present or future environmental impacts. A specific objective is to establish a scientific yardstick for distinguishing sustainable from non-sustainable human activities.

The information may also assist the Yucatan state government in its

ongoing efforts to draw up an integrated coastal management plan. In addition PPY is undertaking, with The Nature Conservancy, a comprehensive strategic plan for the coastal wetlands of the north and northwest Yucatan. (Source: Intercoast Network Newsletter)

Tick-Bird Reintroductions as a Pesticide Alternative

The Zimbabwe Department of National Parks and Wildlife Management and the Veterinary Research Department are cooperating in an experimental program to reestablish populations of native ungulate-gleaning tick predators as an alternative to the use of chemical acaricides on cattle in commercial farming areas.

Use of chemical dips to control tick-borne diseases in cattle is expensive and difficult to manage on a large scale. Some acaricides may have adverse effects not only on cattle, but on nontarget organisms.

Cooperation with farmers in forming poison-free areas large enough to support tick-bird populations is required for successful reintroductions. Five translocations of Red-billed Oxpeckers (*Bupagus erythrorhynchus*) have been attempted to date in the provinces of Mashonaland and Matabeleland. Results are encouraging as translocated Oxpeckers have apparently adapted to their new environments, with breeding recorded at some reintroduction sites. (Source: N.C. Chiswe, reporting in *Zimbabwe Farming News Magazine*, 25 November 1993)

Awards

In February, 1994, The Species Survival Commission (SSC) of the World Conservation Union (IUCN)

announced that it presented the Peter Scott Award for Conservation Merit posthumously to three biologists who were killed on an expedition in August, 1993: Eduardo Aspiazu, the President of Fundacion Natura Capitulo Guayaquil (Ecuador) and expedition leader; Alwyn Gentry, Senior Curator of Botany at the Missouri Botanical Garden; and Theodore A. Parker III, Director of Conservation International's Rapid Assessment Program. The IUCN/SSC Peter Scott Award for Conservation Merit recognizes conservation achievement as it relates to the conservation of biodiversity. It is given in the name of the late Sir Peter Scott, Chair of the Species Survival Commission during the 1960s and 1970s. Sir Peter began the series of IUCN/SSC Red Data Books. (Source: Species Survival Commission)

Submission of News Items

The Society of Conservation Biology has begun publishing a newsletter mailed in between issues of *Conservation Biology*. Announcements of meetings, awards, grants, jobs, and other news items should be sent to the editor of the newsletter, Erica Fleishman, Department of Biology, University of Nevada-Reno, Reno, Nevada 89557. International conservation news items and potential feature articles should be sent to the associate editor for International Conservation News: Dr. Mary Pearl, Wildlife Preservation Trust International, 3400 Girard Ave., Philadelphia, PA 19104, U.S.A. Decisions concerning publication of submitted material rest with the international news editor.