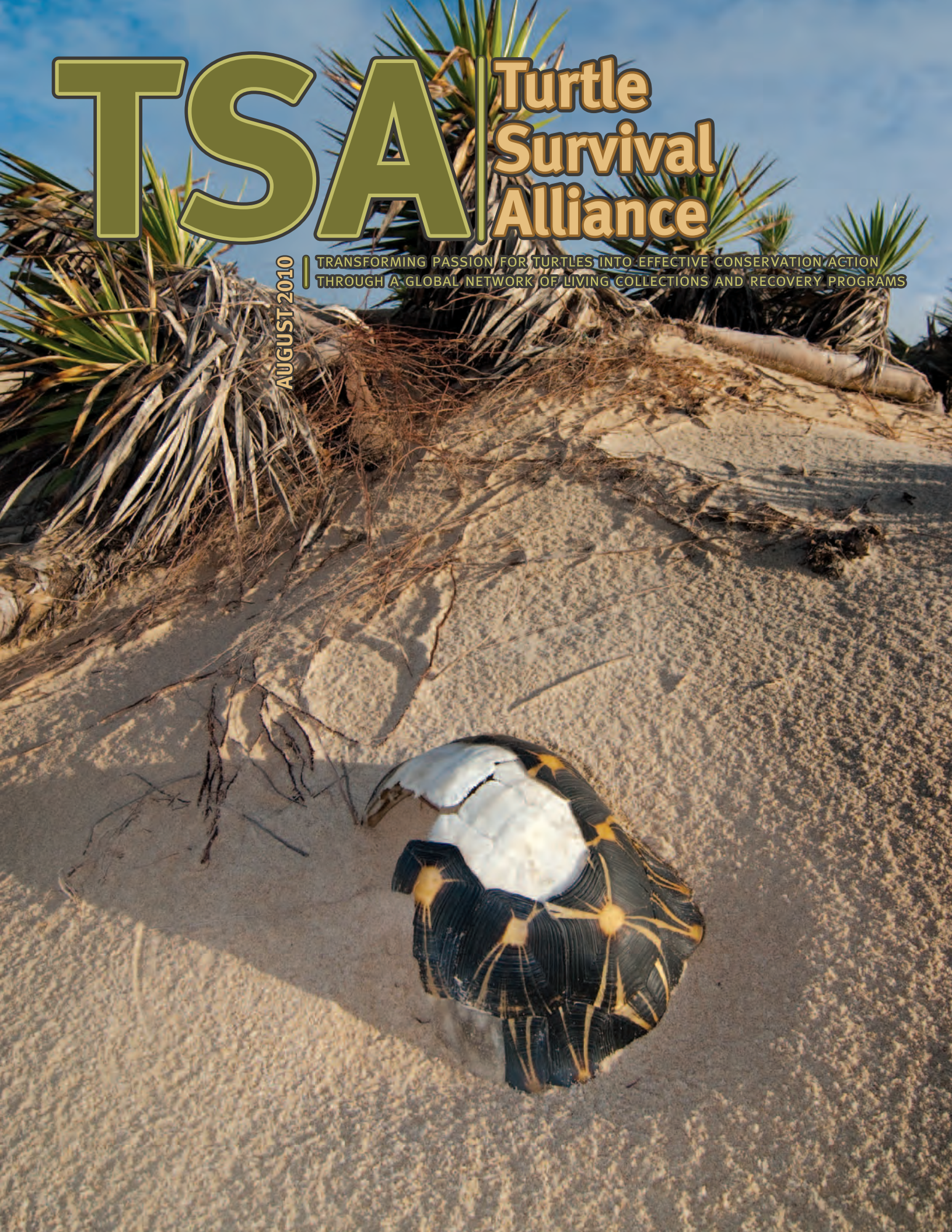


TSA Turtle Survival Alliance

TRANSFORMING PASSION FOR TURTLES INTO EFFECTIVE CONSERVATION ACTION
THROUGH A GLOBAL NETWORK OF LIVING COLLECTIONS AND RECOVERY PROGRAMS

AUGUST 2010

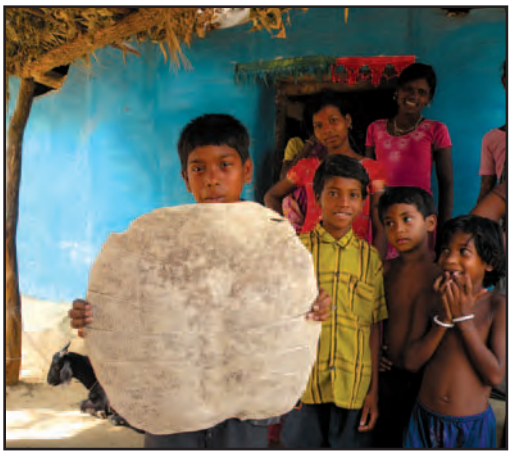
TABLE OF CONTENTS

August 2010 TSA newsletter

Layout, Design, and Editorial Contractor:
Eagle Mountain Publishing, LC
7705 Wyatt Earp Avenue
Eagle Mountain, UT 84005-4382
ww.eaglemountainpublishing.com

Louis W. Porras, Editorial Consultant

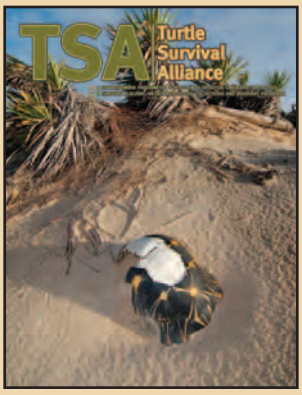
Megan Davies, Layout and Design
megan@megandavies.com



FEATURES

RANGE COUNTRY UPDATES

EXCLUSIVES, NEWS, AND ANNOUNCEMENTS



ABOUT THE COVER: During his first full day in the field on a March 2010 visit to southern Madagascar, Brian Horne made a gruesome discovery. In a trash dump outside the coastal village of Faux Cap, he found the remains of over 200 Radiated Tortoises (*Astrochelys radiata*) that had been slaughtered recently for food. The cover image vividly captures a broken carapace half buried in the wind-swept dunes, a grim harbinger of the carnage that the team would uncover over the following 10 days. For the past 15 years, the number of Radiated Tortoises harvested for food and export has steadily increased, but recent trends are particularly disturbing because they reflect a massive expansion in this trade. Wild populations of these tortoises, especially those close to urban centers, have been decimated and poachers are closing in on protected areas. Formerly numbering in the millions, the Radiated Tortoise now faces a situation similar to that of the American Bison. See story on p. 5.

ABOUT THE PHOTOGRAPHER: Brian D. Horne, Ph.D. currently serves in a dual position, coordinating the development and implementation of the Wildlife Conservation Society's overall turtle conservation strategy as well as directing the Red-crowned Roof Turtle program in India for the San Diego Zoo's Institute for Conservation Research.

Catalyzing Conservation Action in Belize for Central America's Imperiled River Turtle

Thomas Rainwater[1], Tom Pop[2], Octavio Cal[3], Steve Platt[4], and Rick Hudson[5]

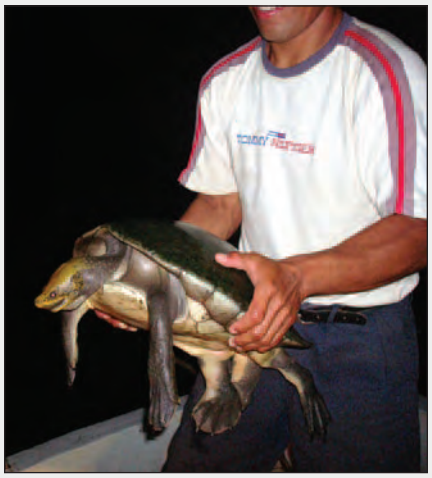
The Central American River Turtle (*Dermatemys mawii*) is found along the coastal lowlands of southern Mexico, northern Guatemala, and Belize (Alvarez del Toro, 1979; Iverson and Mittermeier, 1980; Iverson, 1986; Ernst and Barbour, 1989; Lee, 1996) and is the lone surviving representative of the family Dermatemydidae (Iverson and Mittermeier, 1980). Throughout its restricted range, *Dermatemys* has been intensely harvested for its meat and, to a lesser extent, for its eggs and shell (Moll, 1986; Polisar, 1994, 1995). As a result, *Dermatemys* has been virtually eliminated from much of its former range in southern Mexico, while its status in Guatemala remains unclear (Polisar, 1994). Currently, *Dermatemys* is considered one of the world's most heavily exploited turtles and is classified as Critically Endangered by the IUCN, listed as Endangered under the U. S. Endangered Species Act, and listed on Appendix II of CITES (CITES, 2009; IUCN, 2009; USFWS, 2009).

In Belize, a countrywide survey of *Dermatemys* (locally known as "hickatee") conducted in 1983 and 1984 found that the species was still common to abundant in areas sparsely populated by humans, but declining in more developed areas where the turtles were more accessible to hunters (Moll, 1986). Additional research conducted in north-central Belize from 1989 through 1991 indicated that the exploitation of *Dermatemys* persisted in more populated areas, and that the level of harvesting was not sustainable (Polisar, 1992, 1994, 1995, 1996, 1997; Polisar and Horwich, 1994). As a result, in 1993 the Belize Fisheries Department drafted nationwide comprehensive legislation for the protection and management of *Dermatemys* that included year-round possession limits, a brief closed (non-hunting) season, a complete prohibition on selling and purchasing *Dermatemys*, and a series of protected zones in the major waterways of northern Belize (Polisar, 1994, 1995, 1997; Polisar and Horwich, 1994). Surveys conducted in north-central Belize in 1998 and 1999 suggested that *Dermatemys* was still common to abundant in some remote localities, but that the species was still declining in more developed areas (T. Garel and D. Collins, unpublished).

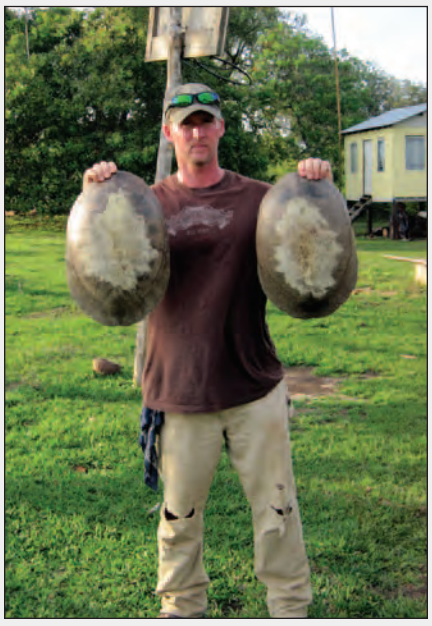
Since that time, the status of *Dermatemys* in Belize remained unexamined until April of 2010, when the TSA initiated a countrywide survey to assess the species' current status in what is believed to be its last stronghold. The core survey team included Thomas Rainwater (TSA) and two Belizean researchers, Tom Pop (Belize Foundation for Research and Environmental Education; BFREE) and Octavio Cal (Ya'axché Conservation Trust). The primary objectives of the survey were to: (1) re-survey localities previously surveyed in the early 1980s so that general comparisons of turtle abundance could be made, (2) survey other areas not included in previous surveys, particularly in southern Belize, (3) train Belizean team members in basic survey and data collection techniques so they could return and conduct more intensive surveys, and (4) work with the Belizean government and non-governmental organizations (NGOs) to stimulate a countrywide interest in *Dermatemys* conservation.

Top: Belizean team member Tom Pop holds an adult *Dermatemys* captured in the Temash River, southern Belize.

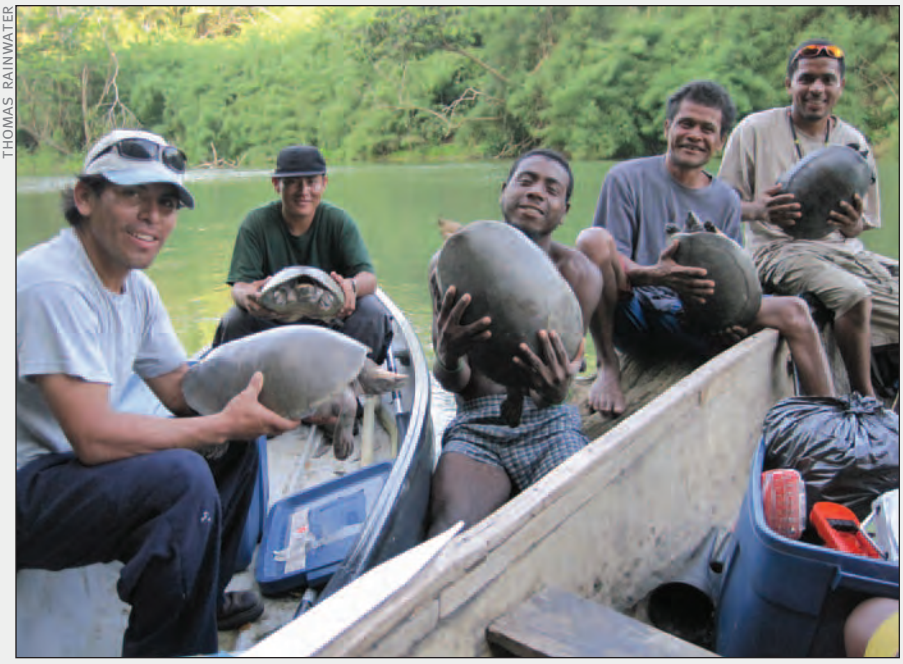
Bottom: Thomas Rainwater displays two *Dermatemys* shells. The turtles were harvested from the Belize River around Easter of 2010.



THOMAS ISHIM



THOMAS RAINWATER


THOMAS RAINWATER

Survey team members Tom Pop and Octavio Cal (**from left**) and local fisherman display adult *Dermatemys* captured in the Belize River.

Surveys were conducted during April and May, which in Belize is generally the peak of the dry season. During this period, turtles are easier to locate because the water levels are low, water bodies are relatively clear due to reduced turbidity from rain and high flow, and turtles are more concentrated in smaller areas (Polisar, 1995). Consistent with previous surveys (Moll, 1986; Polisar, 1995; T. Garel and D. Collins, unpublished), the team employed multiple survey methods, including nocturnal spotlight searches, trammel netting, and diving (free and scuba). When possible, the team also interviewed hunters, fishermen, and other knowledgeable individuals regarding the natural history and local occurrence of *Dermatemys*, the hunting methods employed, and the levels of exploitation (Platt et al., 2004). Each turtle captured was measured, permanently marked, and its location was noted before being released at the point of capture.

From 12 April through 31 May, the team traversed more than 6,200 km of Belize, surveying localities from the deep south to the extreme north of the country. As in the mid-1980s, a wide range of habitats was surveyed, including estuarine rivers (brackish to fresh water sections); brackish rivers, creeks, and lagoons; inland (fresh water) rivers, creeks, lagoons, and ponds; a mountain (foothills) river, and a coastal bay (Moll, 1986). The associated topography and vegetation varied widely among these habitats, from coastal mangrove swamps to evergreen broadleaf forest along the lower slopes of the Maya Mountains (Stafford and Meyer, 2000).

The team surveyed approximately 30 localities, including 18 areas previously surveyed during the early 1980s (Moll, 1986). Overall, the results of the survey indicate that *Dermatemys* is heavily depleted in most of Belize, but healthy populations remain in a few remote areas, especially those receiving some level of protection. While this mirrors the trend observed in surveys conducted during the 1980s and 90s, the current findings are particularly alarming in that the number of localities where turtles were seen, and the number of turtles at these localities, were both much reduced compared to previous surveys. In addition, interviews with fisherman and hunters indicate that the laws and regulations enacted in 1993 for the protection and management of *Dermatemys* are largely ignored by locals, as broad-scale enforcement is difficult to impossible. For example, multiple individuals contend that hundreds of adult *Dermatemys* are still taken from relatively small sections of the Belize River each year, and that hickatee continues to be served in rural village restaurants around the time of Easter.

On a more positive note, the occurrence of *Dermatemys* at multiple, previously unsurveyed localities in southern Belize is encouraging. More comprehensive surveys of these and other areas where *Dermatemys* populations appeared to be secure during the 2010 survey will be vital in developing new conservation strategies, potentially including prioritization of areas for more intensive (and enforceable) protection. In addition, the interest and support the survey team received from the Belizean government, as well as several NGOs, villages, and individual conservationists, guides, and fishermen, was outstanding and ensured the success of the project. The level of local knowledge, concern, and enthusiasm regarding *Dermatemys* conservation in Belize is promising, and plans to bring these interested parties together to discuss an updated national conservation plan are currently underway.

Vision for a Long-term Conservation Strategy

Since 2004, the TSA had prioritized *Dermatemys* for immediate conservation action and tried to launch a program in Mexico, first in Tabasco and then in Veracruz.

Unable to sustain momentum there, a decision was reached to shift focus to Belize, one of the species' strongholds. Recently, one of us (RH) traveled to Belize and met with Mr. Jacob Marlin, the co-founder and director of the Belize Foundation for Research and Environmental Education (www.bfreebz.org), to discuss the possibility of establishing a pilot program to test the feasibility of breeding and rearing *Dermatemys* in outdoor ponds. Mr. Marlin is very interested in the project and pledged his support. The pilot study would be conducted on BFREE property, which encompasses 1,200 acres of forest at the base of the Maya Mountains in central Belize and is surrounded by two protected areas. This pilot study would be a low maintenance operation focused on generating *Dermatemys* food plants (Moll, 1989), while working out such husbandry details as egg laying and incubation (Polisar, 1996). Currently, various pond designs are being discussed so as to provide multiple management options. Filtration will likely be passive and biological, utilizing plants that can be fed back to the turtles. Aeration will require solar power. Start up funds for this phase of the operation are available from a Batchelor Foundation grant to the TSA.

The program would generate hatchlings that can be headstarted and released to help restore depleted wild populations. Once the husbandry techniques are worked out, and the species can be reliably reproduced in good numbers in captivity, the project could then be expanded. The ultimate goal is to take pressures off local populations. The conservation potential of this initiative, if implemented over the long-term, is exciting and provides a vision that this can develop into a model program and, ultimately, a sustainable future for *Dermatemys*. Not surprisingly, the Belize Fisheries Department, under which the purview of *Dermatemys* resides, has endorsed this concept and offered encouraging support (G. Myvett, pers. comm.). Indeed, the idea to build the TSA captive management component upon wild survey results — just completed by Thomas Rainwater and his local team — was first advanced by Fisheries.

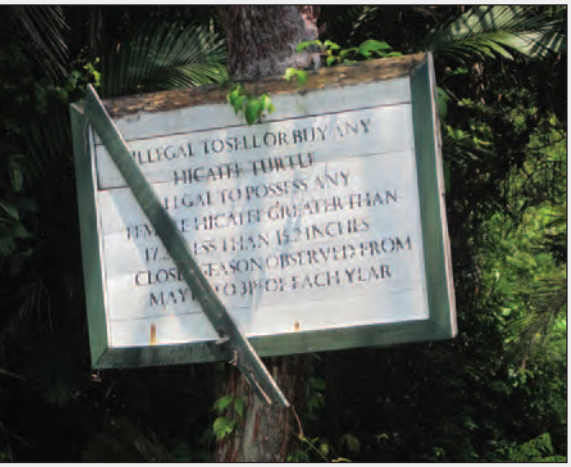
This initiative is exciting for the TSA, and we are encouraged by the outpouring of support and interest by the conservation NGO community in Belize. Looking forward, we believe that this survey work will prove to be catalytic, not only in Belize but for the region, and we look forward to bringing together the various groups interested in *Dermatemys* to begin discussing an overall recovery strategy for this highly threatened and unique turtle.

Acknowledgments. — This project would not have been possible without the support of George Myvett and James Azueta of the Belize Fisheries Department. We also thank the following groups and individuals in Belize for their support during this project: Alton Jeffords and Oceanic Society Expeditions; Benjamin Cruz; Bill Hasse; Bruce and Carolyn Miller; Bruce Cullerton (Rainforest Mechanic); Karl Tillett; Celia Mahung, Elmar Requena, Santiago Cucul, Luis Ishim, Chris Hamley, and the Toledo Institute for Development and Environment (TIDE); Chrissie and Anita Tupper; Clifton and Nancy Bailey (Manatee Lodge); Derrick Hendy and the Belize Audubon Society; Dion Andrews; Doyle Forman, Egbert Valencio, Thomas Ishim, Narco Nakin, and the Sarstoon Temash Institute for Indigenous Management (SATIIM); Eddie

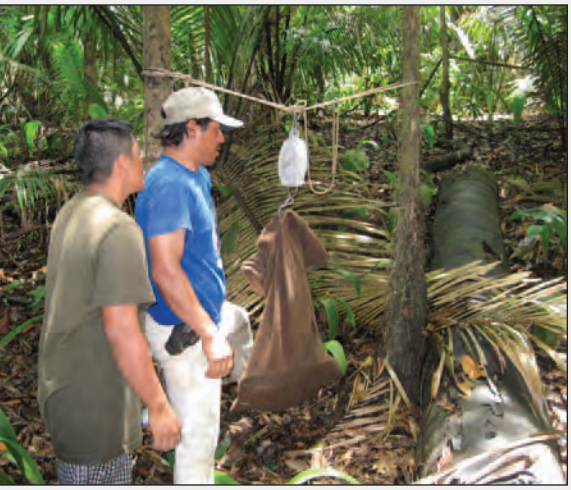
Adult male (**left**) *Dermatemys* from the Belize River, and an adult female (**right**) from Irish Creek in north-central Belize. Male *Dermatemys* characteristically display yellow (although sometimes cream or reddish-brown) coloration on the dorsal surface of the head, whereas the heads of females are typically uniform brown, olive, or gray.

THOMAS RAINWATER

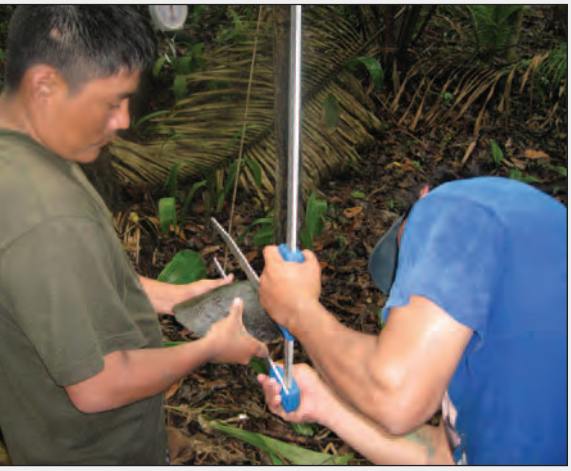
THOMAS RAINWATER



THOMAS RAINWATER



THOMAS RAINWATER



THOMAS RAINWATER

Top: A sign posted along the Río Grande, in southern Belize, indicating the legal size limits and hunting season for *Dermatemys*.

Middle: Survey team members Octavio Cal (**left**) and Tom Pop (**right**) weigh a *Dermatemys* (in bag) captured in the Río Bravo, northwestern Belize.

Bottom: Octavio Cal (**left**) and Tom Pop (**right**) collect shell measurements from an adult *Dermatemys* captured in the Río Bravo, northwestern Belize.

Romero (Programme for Belize); Elma Kay (University of Belize); Frank Mazzotti; Geraldine and Lionel Fermin (Community Baboon Sanctuary); Giovanni Fernandez and Black Rock Lodge; Graham Sampson; Isabelle Paquet-Durand (Galen University); Jacob Marlin and BFREE; Jan Meerman; Jerry Larder and Nikki Buxton (Belize Bird Rescue); Kevin Andrewin; Lloyd and Walter Cassosola; Leonard Myers; Marcelo Windsor, Andre Lopez, Rasheeda Sampson, and the Belize Forest Department; Marga Miller, Anna Zabrowksi, and Monkey Bay Wildlife Sanctuary; Mark Howells, Ruben Arevalo, and Lamanai Outpost Lodge; Nick Wicks, Ginny Fuhs, Lee McLoughlin, and Ya'axché Conservation Trust; Paul Walker (Wildtracks), Percy Flowers, Jr.; Reynaldo and Sergio Gorosica; Richard and Carol Foster; Robin Brockett; Sharon Matola and the Belize Zoo; Steve Usrey; Tamara Sniffin (San Pedro Sun); Tony Garel (Belize Herpetarium and Aquarium Park); Udell Forman; and Vince and Cherie Rose (American Crocodile Education Sanctuary [ACES]). Finally, we are grateful to the Turtle Conservation Fund (TCF), the Mohammed bin Zayed Species Conservation Fund, and the Delta Foundation for generously providing financial support for this project.

Literature Cited

Alvarez del Toro, M., R. A. Mittermeier, and J. B. Iverson. 1979. River Turtle in danger. Oryx. 15: 170–173.

CITES. 2009. Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). (http://www.cites.org).

Ernst, C. H., and R.W. Barbour. 1989. Turtles of the World. Smithsonian Institution Press, Washington, D. C.

IUCN. 2009. International Union for Nature and Natural Resources (IUCN) Red List of Threatened Species. Version 2009.2. (http://www.iucnredlist.org).

Iverson, J. B. 1986. A Checklist with Distribution Maps of the Turtles of the World. Paust Printing, Richmond, Indiana.

Iverson, J. B., and R. A. Mittermeier. 1980. Dermatemydidae, *Dermatemys*. Catalog of American Amphibians and Reptiles. Society for the Study of Amphibians and Reptiles 237: 1–4.

Lee, J. C. 1996. The Amphibians and Reptiles of the Yucatán Peninsula. Comstock Publishing Associates, Cornell University Press, Ithaca, New York.

Moll, D. 1986. The distribution, status, and level of exploitation of the freshwater turtle *Dermatemys mawei* in Belize, Central America. Biol. Conserv. 35: 87–96.

Moll, D. 1989. Food and feeding behavior of the turtle, *Dermatemys mawei*, in Belize. J. Herpetol. 23: 445–447.

Platt, S. G., Kalyar, and T. R. Rainwater. 2004. Inle Lake turtles, Myanmar with notes on Intha and Pa-O ethnoherpetology. Hamadryad. 29: 5–14.

Polisar, J. 1992. Reproductive biology and exploitation of the Central American River Turtle *Dermatemys mawii* in Belize. Unpublished M. S. thesis, University of Florida, Gainesville.

Polisar, J. 1994. New legislation for the protection and management of *Dermatemys mawii* in Belize, Central America. Herpetol. Rev. 25: 47–49.

Polisar, J. 1995. River Turtle reproductive demography and exploitation patterns in Belize: implications for management. Vida Silvestre Neotrop. 4: 10–19.

Polisar, J. 1996. Reproductive biology of a flood-season nesting freshwater turtle of the northern Neotropics: *Dermatemys mawii* in Belize. Chelonian Conserv. Biol. 2: 13–25.

Polisar, J. 1997. Effects of exploitation on *Dermatemys mawii* populations in northern Belize and conservation strategies for rural riverside villages. Pp. 441–443 *In* J. Van Abbema (Ed.), Proceedings: Conservation, Restoration, and Management of Tortoises and Turtles: An International Conference, 11 to 16 July 1993, State University of New York, Purchase, New York. Bronx, NY: New York Turtle and Tortoise Society.

Polisar, J. and R.H. Horwich. 1994. Conservation of the large, economically important turtle *Dermatemys mawii* in Belize. Conserv. Biol. 8: 338–342.

USFWS. 2009. U. S. Fish and Wildlife Service (USFWS) Endangered Species Program. (http://www.fws.gov/Endangered/wildlife.html).

[1]Contract Biologist, Turtle Survival Alliance, 619 Palmetto Street, Mt. Pleasant, South Carolina 29464. Email: trrainwater@gmail.com

[2]Belize Foundation for Research and Environmental Education (BFREE), P. O. Boc 129, Punta Gorda, Toledo District, Belize.

[3]Ya'axché Conservation Trust, P. O. Box 177, Punta Gorda, Toledo District, Belize.

[4]Department of Biology, Sul Ross State University, Alpine, Texas 79832.

[5]President, Turtle Survival Alliance, Fort Worth Zoo, 1989 Colonial Parkway, Fort Worth, Texas 76110.