

TSA

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AUGUST 2004

Volume 4 No. 1

Publication supported

by:  fort
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ZOO



Preserving Options for the
Recovery of Wild Populations

TURTLE SURVIVAL ALLIANCE

An IUCN Partnership Network for Sustainable Captive Management of Freshwater Turtles and Tortoises



First captive breeding of the Arakan forest turtle, *Heosemys depressa*, by Dwight Lawson, Turtle Survival Alliance Co-chair (see inside story on page 10).

The mission of TSA is to develop and maintain an inclusive, broad-based global network of collections of living tortoises and freshwater turtles with the primary goal of maintaining chelonian species over the long term to provide maximum future options for the recovery of wild populations.



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From the TSA Co-Chairs...

Dear TSA Supporter:

Welcome to the fourth TSA Newsletter. These are exciting times for the TSA and this year has been our busiest by far, something that is amply reflected in this volume. We continue to grow and expand in scope, and our organization becomes more complex each day. Some of the past year's highlights include:

- Incorporated as the Turtle Survival Alliance Foundation, soon to be a 501©(3) nonprofit organization.
- Conducted a population management training workshop in Fort Worth, Texas.
- Conducted a Turtle Husbandry and Veterinary Training workshop in Singapore that was attended by 45 students from 11 Asian countries.
- Witnessed the opening of the International Center for the Conservation of Turtles (ICCT) at the Muenster Zoo.
- Initiated a small grants program for TSA Partners.
- Successfully imported a captive group of Roti Island snakeneck turtles from Europe.
- Rescued nearly 300 confiscated turtles for placement in TSA homes.
- Provided significant support to the NYTTS Asian Scholarship Program.
- Developed our first collaborative range country conservation program for India's turtles (with the Madras Croc Bank Trust).
- Piloted a new electronic newsletter to keep our partners better informed.
- Provided financial support to turtle conservation programs in India, Myanmar and Malaysia.
- Organized our second annual TSA conference.
- Implemented a bi-level membership and dues structure.
- Prepared to launch a major fundraising campaign through the European Association of Zoos and Aquaria (EAZA) known as "Shellshock."

What is amazing about all this work is that it was accomplished almost entirely through the good will and dedication of a strong volunteer network. And while this situation may sustain us for the time being, as the TSA grows and expands its programs, it is clear that we will need paid employees. Our challenge then in the next few years will be to determine how to hire part-time employees without impacting the level of support that we provide to range country programs. Please consider this when we launch our membership dues campaign that we believe will enable us to meet our growing financial demands and operating expenses. Remember too that the TSA is one of the rare conservation organizations where 100% of your donation for *in situ* programs will remain earmarked solely for that cause with no overhead or administrative costs.

Our goal for this coming year is to continue to expand the TSA's global network, and to position ourselves financially to be able to meet the many challenges of saving turtles. Some excellent examples of progress toward this goal are found on the following pages.

Rick Hudson and Dwight Lawson
Co-Chairs, Turtle Survival Alliance

To become a member of TSA, pay dues or donate to one of our conservation programs, go to our web site www.turtlesurvival.org and click on "Support the TSA" or "Join the TSA."



Turtle Husbandry and Veterinary Care Workshop

Sponsored by the Singapore Zoological Gardens and The Turtle Survival Alliance

The Turtle Survival Alliance (TSA), in conjunction with the Singapore Zoological Gardens, conducted a turtle husbandry and veterinary care workshop March 29 through April 1, 2004. About 45 people from 11 countries participated. Nations represented included Australia, Cambodia, Hong Kong (China), India, Indonesia, Malaysia, Myanmar, Singapore, Sri Lanka, Thailand, and the US. Represented were professors, veterinarians, wildlife center staff, graduate students, zoo personnel, field researchers, animal rescue center staff, aquarium personnel, and wildlife sanctuary wardens.

Building the capacity for turtle conservation in range countries is one of the primary goals of the TSA. The Singapore training workshop is an excellent example of how we can achieve this, empowering an enthusiastic cadre of turtle practitioners with the skills and tools to save turtles. Our challenge now is to be able to provide them with the resources - facilities, supplies, logistical support - to be successful. Increasingly the TSA is



Dr. Chris Tabaka demonstrates turtle sexing techniques to a group of Thai veterinary students at the Singapore workshop.



Forty-five people from 11 countries participated in TSA's first Turtle Husbandry and Veterinary workshop which was hosted by the Singapore Zoo. Hugh Quinn put together the funding package, through various grants, that allowed this workshop to take place.

Instructors were Bill Holmstrom (Collection Manager of the Wildlife Conservation Society's (WCS) Herpetology Department), Doug Hendrie (Asian Turtle Coordinator for Cleveland Metroparks Zoo and WCS), Dwight Lawson (General Curator of Zoo Atlanta), Hugh Quinn (General Curator of Cleveland Metroparks Zoo) and Chris Tabaka (Veterinarian at the Detroit Zoological Institute). Topics discussed included the TSA, the Asian turtle crisis, species identification, individual turtle identification techniques, record keeping, turtle nutrition, triage, shipping, temporary holding, disposition of confiscated turtles and small population management. Instruction was given through PowerPoint presentations and hands-on work utilizing the Singapore Zoo's living collection.

becoming recognized as a global force for turtle conservation, and increasingly we are called on to help support range country conservation efforts. To meet these demands we will need to step up our fund-raising efforts considerably. The struggle to save turtles will be won or lost in the range country, and at least for now in Southeast Asia, the TSA's global network has expanded to meet this challenge.

Support to conduct this workshop was provided by Asia Pacific Breweries Pte Ltd, American Zoo and Aquarium Association Conservation Endowment Fund, Cleveland Zoological Society, Institute of Museum and Library Services, Lady Yuen-Peng McNeice, SFA Football Club and the Singapore Zoological Gardens.

A special thanks is extended to Singapore Zoo's Francis Lim and his host committee.

As a spin-off of the workshop, a *Batagur* working group was formed to help coordinate conservation efforts for that critically endangered species. The budding veterinary working group for Asian turtles was also strengthened. This course will be offered again in 2005 at Kadoorie Farm and Botanic Garden in Hong Kong, targeting participants from China.



SINGAPORE ZOO



Asian Turtle Coordinator Position Created Advancing the Mission and Goals of the Turtle Survival Alliance (TSA)

Through a joint initiative of **Cleveland Metroparks Zoo (CMZ)** and the **Wildlife Conservation Society (WCS)**, an Asian Turtle Coordinator position was recently created to help reduce the threat to freshwater turtles and tortoises in East and Southeast Asia posed by massive and unsustainable hunting and trade.

The Coordinator works with TSA and other relevant parties such as TRAFFIC, IUCN Tortoise and Freshwater Turtle Specialist Group, and the Turtle Conservation Fund. Additionally, important alliances are being formed with range country governments, non-government organizations, institutions, agencies and individuals.

Specifically, the Coordinator was hired to enhance the development in East and Southeast Asia of 1) appropriately managed turtle assurance colonies, 2) turtle rescue facilities, and 3) a regional prioritization strategy and action plan for controlling turtle hunting and trade. Overall this position facilitates a coordinated and improved response from the conservation community and promotes a collaborative strategy for saving Asian turtles.

In fulfilling these responsibilities, the Coordinator performs such duties as 1) assisting in the implementation, coordination and evaluation of turtle husbandry and veterinary care courses, 2) conducting need assessments of captive turtle facilities, 3) initiating formative cooperative turtle breeding programs, 4) assisting with confiscations to place turtles in appropriate facilities, 5) planning a follow-up workshop of the one conducted in Cambodia in 1999 to enhance regional collaboration among CITES management authorities, 6) facilitating training courses that will help control turtle trade, and 7) working with management authorities to improve enforcement of laws regulating turtle trade. The Coordinator is also compiling a database of East and Southeast Asian institutions, individuals and agencies involved or interested in turtle conservation, which is being utilized to create a network that will enhance conservation efforts within the region. A prioritized list of critical conservation initiatives for the region's chelonians is also being created as part of Range State Action Plans for all Southeast Asian countries. These documents are also very useful for fund-raising.

CMZ and WCS are happy to announce that Doug Hendrie was contracted as the Asian Turtle Coordinator. Doug is stationed in Hanoi, Vietnam, and has served as Technical Advisor for Education for Nature – Vietnam (ENV), program Manager/ Technical Advisor for the Turtle Conservation and Ecology Project (TCEP) in Vietnam, and as Cuc Phong Conservation Project Manager, Vietnam.

Since assuming this position, Doug has literally “hit the ground running” and is rapidly compiling profiles of existing range country turtle conservation programs, their personnel, facilities, history, potential, strengths, weaknesses and needs. Through his timely and detailed reports, the TSA is kept well-informed of the current activities of these programs, and is able to take decisive action with regards to funding or other needed support.

Moreover, Doug is working hard to expand the TSA global network to include the various rescue, breeding and headstart facilities that already exist throughout southeast Asia. Though limited in number, these facilities offer a tremendous benefit to turtle conservation in the area because they empower and educate the local people. Generally constrained by funding shortages, it is important that the TSA invest in these range country centers. First, because it is the most cost effective method of promoting turtle conservation action in the area, and second, because these centers offer hope for the future for that region's turtles.

Thanks, Doug, for bridging the gap between what we do for turtles at home with our range country counterparts. It is through the development of such partnerships for turtle conservation that keeps the TSA relevant and part of the “big picture.”



Creation of this position was made possible through funding from Cleveland Zoological Society, WCS, Institute of Museum and Library Services, and the G.G. Wade Foundation (Cleveland).



Doug Hendrie examines juvenile mangrove terrapins for sexual dimorphism with a group at the Batagur headstart facility near Terengganu, Malaysia. The people in the photos (from left to right) are Karmila Duli, Soh Chong Leng, Hugh Quin and Dr. Chan Eng Heng.



Grand Opening of the International Center for the Conservation of Turtles (ICCT)



It has been a long, hard struggle, but finally the first room of the breeding facility for endangered Asian turtles at the Allwetter Zoo in Muenster Germany has been completed. After a construction phase of about 20 months, the International Center for the Conservation of Turtles (ICCT) has officially started operations with the opening ceremony on October 18, 2003.

The first of Elmar Meier's rare and valuable turtle stock had already been moved to the ICCT in September. Following a lecture by turtle expert Professor Fritz Jürgen Obst (DGHT), Elmar Meier - the initiator of this cooperative venture between the Zoological Society for the Conservation of Species and Populations (ZGAP), Muenster Zoo and the German Herpetological Society "Deutsche Gesellschaft für Herpetologie und Terrarienkunde" (DGHT) - presented the new inhabitants of the ICCT to more than 150 invited guests from six countries (Switzerland, Czechia, Netherlands, France, United Kingdom and Germany). Far into the night, experiences were exchanged and new contacts established.



The first breeding room to open at ICCT is for tropical turtles. Here visitors get a first look at many of the vivaria.

Currently, 119 turtles are living in the ICCT, belonging to the following species:

Chinemys megaloccephala
Chinemys nigricans
Cuora aurocapitata
Cuora g. galbinifrons
Cuora g. bourreti
Cuora mccordi
Cuora pani

Cuora trifasciata
Cuora zhoui
Heosemys depressa
Leucocephalon yuwonoi
Mauremys annamensis
Notochelys platynota
Sacalia quadriocellata

All turtles have settled in and the first egg deposition in *M. annamensis* has already occurred. This unique project has been supported by the Turtle Conservation Fund and Conservation International, in addition to many German and European donors and sponsors. In the long run, the first breeding room will be allocated to tropical animals. The subtropical room still has to be established, especially for breeding the four endemic *Cuora* species. Hopefully, this second room and the necessary shading and security installations will be completed by summer 2004.

The completion of the interior of the affiliated information and education center will also soon be started, with funds from the German Foundation "Nordrhein-Westfälische Stiftung für Umwelt und Entwicklung" (Environmental Foundation of North Rhine-Westphalia).



Rare and Chinese endemic *Cuora* (seven taxa) are the focal species of the ICCT program. A beautiful flowered box turtle, *Cuora galbinifrons*, is shown here.



Elmar Meier inspects one of his turtle vivaria in preparation for the grand opening of the ICCT. This facility is a model for private-public collaboration, integrating one of the most successful breeding collections of threatened Asian turtles in the world with a new facility benefitting from both Zoo support and infrastructure.



SHELLSHOCK

The European Association of Zoos and Aquaria (EAZA) Turtle & Tortoise Conservation Campaign 2004/2005



Each year the European Association of Zoos & Aquaria (EAZA) adopts a conservation campaign – a cause under which the 300 member institutions can unite, promote and raise funds. Previous EAZA campaigns have included tigers, the bushmeat crisis and the conservation of the Atlantic Rainforest. The next EAZA conservation campaign will be “Shellshock” and will focus exclusively on turtles and tortoises. The Shellshock campaign will have three main aims:

1. Raising awareness of the biggest terrestrial vertebrate taxon extinction event since the disappearance of the dinosaurs.

Although they may not be widely considered as charismatic as many mammals and birds, tortoises and turtles nevertheless have the capacity to evoke great affection and sympathy amongst zoo visitors. The campaign will highlight the plight that many species face and the conservation action needed to save them.

2. Promoting and supporting further member participation in TSA Assurance Colonies.

In the short term, the only hope of survival for many species of tortoise and freshwater turtle is in captivity- in populations planned, established and managed specifically for this purpose. The participation of many more zoos in TSA Assurance Colonies is required to prevent further species extinctions.

3. Fund-raising initiatives for specific in situ turtle and tortoise conservation projects.

For species where there is still a chance of saving them in the wild, Shellshock will be raising money to support priority initiatives in range countries. Our initial fund-raising target for Shellshock will be 150,000 Euros (\$180,000) over the 12-month campaign period.

Shellshock will launch in September 2004 at the Annual EAZA Conference in Kolmarden, Sweden.

TSA Holds Turtle Population Management Workshop



From left to right: Richard Ogust, Chris Hagen (sitting) Julie Tougas and Ray Farrell look at the latest version of population management software.

A population management workshop was held at the Fort Worth Zoo January 17–19, 2004. Designed to provide TMG coordinators with the basic tools and knowledge to properly manage a captive population, the workshop was attended by 10 TSA partners. Instructors were Kevin Willis (Minnesota Zoo) and Bob Wiese (Fort Worth Zoo), both of who have a combined background of nearly 30 years in teaching captive population management techniques. Hugh Quinn, Annabel Ross and Rick Hudson assisted with the curriculum.

Students received training on how to organize a TMG, the use of studbooks, record keeping, genetics of small populations, taxonomy and conservation, demography, and the various types of population management and the goals of each. Two useful summary documents resulted from this workshop that TSA partners should find useful: *Guidelines for Turtle Record Keeping* and *Guidelines for Turtle Population Management*. Both of these are available by contacting Hugh Quinn at hrq@clevelandmetroparks.com. This workshop was made possible by funding from the Cleveland Zoological Society, G.G. Wade Foundation and the Fort Worth Zoo.

TSA Rescue Group Staying Busy

The TSA Rescue Group has experienced another busy year so far in 2004, having received, treated and placed 398 turtles and tortoises. Though shy of the numbers processed in 2003 when 533 turtles were rescued, handling nearly 400 confiscated turtles is enough to keep one busy, especially if it's done right.

And that's what TSA Partner Bill Ninesling does-cares for turtles with compassion and a remarkable sense of dedication. By making his turtle facilities available to TSA, and even expanding to accommodate the growing demands placed on him by the ever-frequent USFWS seizures, Bill provides a critical service to the TSA.



Bill Ninesling hand feeds a group of confiscated wood turtles.

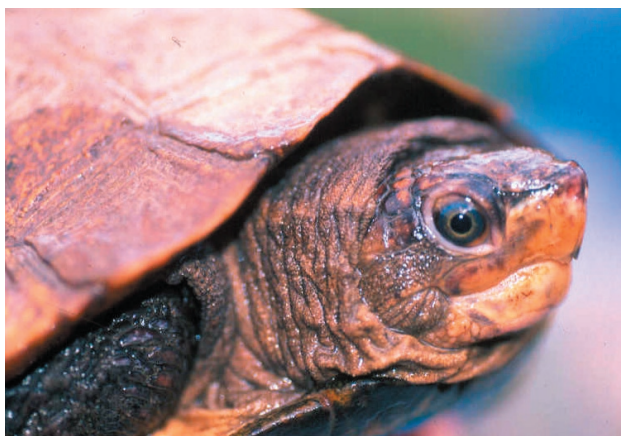
Without the commitment of Bill and his family, there are a lot of turtles that would not be here today, and TSA would not be able to provide the service that we do for turtle rescue. It is through the tireless work of partners like Bill Ninesling and



A sizeable group of juvenile Fly River turtles have been placed through the TSA rescue process since 2003.

Annabel Ross on behalf of turtle welfare that the TSA has been able to cultivate a solid working relationship with USFWS.

Other partners that regularly contribute their time and expertise for rescue are Lonnie McCaskill, and Drs. Greg Fleming and Chris Tabaka. And it is not only USFWS that contacts TSA for assistance. Again, Hong Kong AFCD requested our assistance in placing over 300 baby Indian star tortoises, a group that we split with TSA Europe. Currently, we are assisting with groups of leaf and Malayan flat-shelled turtles. Running such an operation, with the frequent vet expenses and shipping bills, is not without costs. The Rescue Group is able to sustain their work at a break-even point through the processing fees that are passed on to those receiving turtles.



Notochelys (shown here) and Cyclemys will be included in an upcoming shipment that TSA is placing for Hong Kong authorities.



Large numbers of Indian star tortoises were again handled by the Rescue Team in 2004.



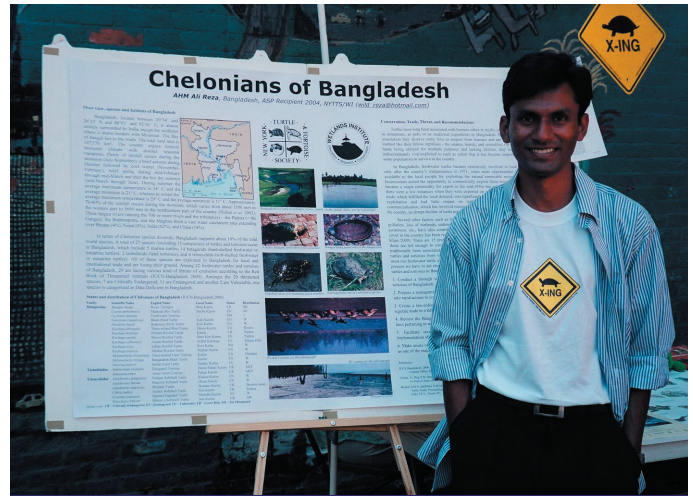
TSA Awards Grant for Asian Scholarship Program

In response to the catastrophic decline of turtle and tortoise populations worldwide, particularly in Southeast Asia where the impact of the Chinese markets has had devastating consequences, the Asian Scholarship Program (ASP) was born. It is a vital response to the unsustainable loss of turtle populations throughout the region, better known as the *Asian turtle crisis*.

This program brings young aspiring herpetologists from Asia and other parts of the world to the United States for intensive summer conservation courses, field trips and workshops – enabling them to return to their native countries armed with knowledge and skills to begin to save their nation’s chelonian fauna.

The ASP has three primary goals: to develop scientific expertise for chelonian research in their native country, to build conservation leadership skills and to promote the formation of an ecological network. The program began with one student in 2000, expanded to two in 2001, three in 2002 and four in 2003.

Countries represented include Vietnam, Indonesia, Cambodia, India, China, Myanmar, Laos and Madagascar. Students receive primary training at the Wetlands Institute in Stone Harbor, New



2004 Asian Scholarship Program recipient A.M.H. Ali Reza is shown here with a poster on the turtles of Bangladesh that he presented to the NYTTS.

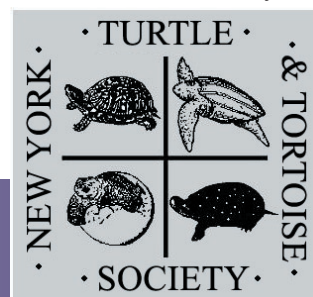
Jersey, under the supervision of Roger Wood, with the local diamondback terrapin as the focus. Additional workshops and field trips are provided by Dr. Peter Pritchard, Bronx Zoo and AMNH in New York, and a chance to participate in field work with gopher tortoises in Florida.

The Turtle Survival Alliance is pleased to announce the award of a \$2,000 grant to the ASP as partial funding for the 2004 scholarship. This year’s recipient is A.M.H. Ali Reza from Bangladesh, a country with extensive wetlands and a diverse chelonian fauna. Reza recently completed his masters degree and is seeking admission into a PhD program with an eye to becoming the premiere herpetologist in Bangladesh. Please join us in welcoming him to our annual conference in Orlando.

The Asian Scholarship Program is a program of the New York Turtle and Tortoise Society in partnership with the Wetlands Institute, Chelonian Research Institute, Gopher Tortoise Council and the Wildlife Conservation Society.



From left to right: Shung Fung Chen (from Sarawak) who was an intern at the Chelonian Research Institute and is now back in Malaysia working on Batagur. Kaylar Nyunt Thein (Myanmar), Phouthone Kingsada (Laos) and Riana Rakotondrainy (Madagascar) were 2003 Asian Scholarship Program students that attended TSA’s first annual conference.



TSA



TSA Imports Roti Island Snakeneck Turtles



The Roti Island snakeneck, *Chelodina mccordi*, is recognized as one of the most endangered species of chelonians on the planet. This Indonesian endemic has an extremely limited range and is ranked as Critically Endangered by the IUCN Red List and considered 'commercially extinct' by importers. It is

considered one of the Turtle Survival Alliance's highest priorities for captive management.

Through a collaborative effort by numerous TSA Partners, the *C. mccordi* TMG recently imported 47 captive-bred turtles from Europe. All were bred by Oliver Römpf from his group of wild-caught founder stock. These specimens have been distributed among eight individual and institutional partners of the TSA and represent new bloodlines to bolster the genetic potential of the North American captive population. Successful breeding groups currently exist in six U.S. and at least three European facilities, including both zoos and private breeders. Though founder representation is relatively low at around 12-15 turtles, sufficient bloodlines exist to effectively maintain this captive population for long-term survival if the genetic potential is carefully managed. A studbook, in preparation at the Columbus Zoo, will be an important tool toward realizing this goal.

Preparations are currently being made to sample all possible founder specimens for DNA typing. Kits are being assembled with detailed instructions for drawing blood for analysis at the lab of Dr. Michael Forstner at Texas State University. A grant proposal to the Columbus Zoo is also in preparation to provide funding for this genetics work. Determining relationships within existing captive founder populations will help ensure that genetic integrity is maintained within the captive-bred population.

Anyone interested in participating in this program is urged to contact TMG coordinator Paul Vander Schouw at chelidman@tampabay.rr.com.

TSA Incorporates

In May 2004, the TSA incorporated in the state of Texas as the Turtle Survival Alliance Foundation, and is applying for 501(c)(3) nonprofit status. This move allows the TSA to more effectively handle financial transactions and transfers the account from the Fort Worth Zoo to a local Compass Bank.

Donors

The TSA wishes to acknowledge the following donors for their generous contributions of \$100 or more to turtle conservation. We sincerely appreciate your support.

Columbus Zoo
Disney's Animal Kingdom
Dallas Zoo
Detroit Zoological Institute
Jim & Kristin Kranz
Fort Worth Zoo
Island Foundation
Charles & Debra Landrey
Richard and Madeline Linck
Tim McLaughlin
Machi Miller
Gary Wilfong
Zoological Society of San Diego

2004 TSA Conference Sponsors

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The Bean Farm
Brett and Nancy Stearns

Special Thanks

Many thanks to **Zoo Atlanta** for generously sponsoring and hosting the TSA-US steering committee meeting in February 2004. Using in-kind support from their corporate partners, Delta Airlines and Holiday Inn, travel and hotel vouchers were donated to allow the group to travel with minimal personal expense.

ACKNOWLEDGEMENTS

This issue of the TSA Newsletter is dedicated to some of the "workhorses" of the TSA: Lisa Lowell (Secretary and Membership Coordinator), Bill Ninesling (Rescue), Annabel Ross (Rescue, Permits and Records), Darrell Senneke (web site), Hugh Quinn (Fundraising and Training workshops), Lonnie McCaskill (Rescue, Fund-raising and conference organization), Chris Tabaka and Grag Fleming (Veterinary support). Special thanks to TSA conference program chairmen, Charlie Innis (2003) and Don Boyer (2004) and to Meg Bommarito (Fort Worth Zoo) for the many hours spent on the layout and design of this newsletter.



The Next Generation



First Captive Breeding of the Arakan Forest Turtle

The honor of the first-ever captive breeding of *Heosemys depressa* belongs to Dwight Lawson. Dwight reports four eggs were laid 23 December 2003. The eggs measured 62-67 mm long by 37-38 mm wide, and were incubated at 27 – 29 °C in 1:1 vermiculite. Blood vessel development was noticed in one egg on 23 March. One egg hatched 2 May 2004, a second on 23 May. To break an apparent diapause, two eggs were cooled after about 50 days of incubation but showed no signs of development. Hatchlings began eating about three weeks post hatching and are feeding on greens and chopped vegetables, but have consistently refused live food.

Toronto Zoo Announces Vietnamese Box Turtle Hatching

A rare hatching of Vietnamese box turtles, *Cuora galbinifrons*, occurred at the Toronto Zoo in 2003. Eggs were laid in a large exhibit on 3 August and incubated on vermiculite (1:1) at 27° C and two hatched on 18 and 20 October.



Houston Zoo Announces Captive Breeding of Yellow-headed Temple Turtles

Two *Hieremys* have hatched at the Houston Zoo, progeny of a male from the Hong Kong confiscation of December 2001. Four eggs were laid in the water in a winter holding area on 20 January 2004, and two hatched on 22 and 28 April after 93 and 99 days of incubation at 28.5 – 30.5° C. The staff reports rapid growth on a mixture of various greens, snails and Mazuri turtle chow, and weights of 130- 138 grams had been attained in less than three months. The first hatching of *Hieremys* from the Hong Kong seizure was at Paul Vander Schouw's facility, where seven hatched from eggs laid by wild-caught gravid females in summer 2002.

Tewksbury Institute announces the hatching of seven spider tortoises

Maurice Rodrigues of the Tewksbury Institute of Herpetology announces the hatching of seven *Pyxis a. arachnoides* and two *Pyxis a. brygooi* since changing incubation techniques in November 2003. Maurice reports that eggs are incubated for the first 35 days at 30° C, then moved to a wine cooler at 18° C for 35 days, then back to 30° C for 35 days. If development is observed, eggs are left to complete incubation. If not, they are again chilled to try and break diapause. One egg required three such cooling cycles to trigger development.





The Next Generation



New Bloodlines for Asian Mountain Tortoises

Three new bloodlines for *Manouria e. emys* were integrated into the TSA population in 2003. The Fort Worth Zoo hatched 16 from a clutch of 41 eggs, half of which were infertile. Eggs were laid on 1 July and began hatching on 1 September. The eggs were incubated in vermiculite (2:1 with water) at 28 – 29° C. The Zoo's breeding group consists of 2.3 adults, all from the 2001 Hong Kong seizure. This is the first captive breeding from this group, and currently 44 eggs from a different female are incubating. Dwight Lawson

reports that two clutches of *emys emys* hatched in his private collection in 2003. Two females laid clutches of 34 and 25 in late July and mid September. He reports approximately 70 percent hatch rate all together, but had some incubation problems (incubated at 29° C).



TSA Announces First Partner Grant

When the TSA – US Steering Committee met in February 2004, they set aside \$2000 for a Partner Grants Program with the goal of directly providing financial support to partners whose activities strengthen our mission. This program is designed to fund activities that:

- Conduct scientific, question-driven experiments in captive husbandry.
- Collect data or conduct applied research that improves overall success with assurance colony efforts.
- Increases the effectiveness of Taxon Management Groups.
- Facilitates participation with *in situ* conservation effort.
- Enhances the capacity of assurance colonies including training, strategic planning or equipment purchases.

Priority program areas that are considered particularly relevant include projects that assist in the success of TMGs, husbandry research that is likely to broadly impact the TSA Partnership, capacity building for expanding F1 holdings, and launching special initiatives or creating unique opportunities to strengthen partner involvement in the TSA.

The recipient of TSA's first Partner Grant is Dr. Brent Palmer, a Reproductive Endocrinologist specializing in reptiles and amphibians in the Biology Department at the University of Kentucky. Brent has maintained a collection of turtles and tortoises for 35 years and is passionate about their conservation. His project, entitled ***Reproduction in Endangered and Threatened African Tortoises***, is designed to investigate the role of circannual environmental factors (photoperiod, temperature and moisture levels) on reproduction in three species of threatened tortoises: Egyptian, Pancake and Home's Hingeback. The objective is to better understand the captive conditions required to optimize reproduction in these species. **Congratulations, Brent!**



TSA Range Country Programs Supported by TSA:



India: A Partnership for the Conservation of India's Endangered Freshwater Turtles



The Madras Crocodile Bank Trust (MCBT), in conjunction with the Turtle Survival Alliance, has announced a collaborative program designed to develop and implement conservation action plans for some of India's most endangered freshwater turtles. In terms of preserving overall chelonian diversity, India ranks high in importance for directing limited conservation resources. A five-year plan lays the groundwork for a multi-species, multi-faceted program that includes a range of components including field surveys, captive breeding management and public awareness has been approved for approximately \$60,000. The bulk of this budget will support two Ph.D students based out of MCBT, one focused on captive aspects, the other on field surveys. TSA supporter Walter Sedgwick pledged (\$7500) the first year's funds that were in turn matched by the TCF (\$6000) and TSA (\$1500). Construction funds for expansion and improvements to aquatic facilities at MCBT were provided by the British Chelonia Group, an excellent example of the kinds of strategic partnerships that we need to cultivate to support this program long-term.

Due to their strong reputation and standing within both the national and international herp conservation communities, the MCBT is uniquely positioned to catalyze a broad range of initiatives for India's freshwater turtles. The critical components are already in place in India, where a network of existing crocodile facilities and zoos exist to support this program. MCBT, with their established infrastructure (including facilities, incubation room, technical expertise, husbandry skills) will serve as the focal point for this program, but perhaps their most important asset is a genuine desire to see this through. The TSA is proud to join forces with such a well-respected facility like the MCBT, and we believe that this program will become the model for building other such conservation partnerships as *we expand the TSA global network.*



A male painted roofed turtle, Kachuga kachuga, in full breeding color. Critically endangered due to years of overharvesting for food, this rare turtle will be one of the program's focal species



Both K. kachuga and the three-striped roofed turtle, K. dhongoka, are shown here, and are being headstarted at the Deori Crocodile Center in Morena, India.



MCBT Director Harry Andrews inspects some of the 40 juvenile crocodile facilities at MCBT. This area is used infrequently now and will be converted to turtle breeding and rearing ponds with funding from the British Chelonia Group.

A planning workshop is scheduled for January 2005 to identify which of India's turtles are most in need of assistance and to write species specific conservation and management plans for each of them. This too has been funded through a generous donation by TSA partners Jim and Kristen Kranz, bringing the total to \$26,000 raised since this idea was conceived in October 2003.



Expanding the TSA Global Network



Malaysia: The Setiu River Terrapin Conservation Program with KUSTEM



The Setiu River in Terengganu, Malaysia, has been a site where eggs from the critically endangered Asian river terrapin, *Batagur baska*, have been traditionally collected for decades. However, the species has declined dramatically in this area, and egg collectors report that current nestings total no more than 40 per year. Urgent conservation measures are needed to prevent their extinction here in the very near future. Fortunately, the University College of Science and Technology Malaysia (KUSTEM) is located nearby and has been collecting, incubating and hatching eggs for several years, and headstarting hatchlings for release.

In 2003, 70 three- and four-year old terrapins were released, and recaptures conducted. This provided the impetus to expand the project, and in 2004, 364 eggs (20 clutches) were purchased from villagers and fishermen to expand the headstarting program, indicating the willingness of the local community to support the conservation goals of this program.



Professor Chan (left) watches as her student mists Batagur eggs incubating in Styrofoam boxes.

with predominantly one sex as some sea turtle programs did years ago?

The KUSTEM project has the potential to bring some much-needed science to the existing *Batagur* conservation efforts in Malaysia and to answer many questions that could greatly improve these recovery techniques. KUSTEM has all the ingredients needed to help

ensure that this program is successful over the long-term, including ample fishponds and hatchery space to support the headstarting effort, a principle investigator with 12 years experience with marine turtle research and conservation, and most importantly, a steady stream of students to carry out the work. An added benefit is that plans are already underway to extend the headstarting program to include Malaysian painted terrapins, *Callagur*, another critically endangered species.

Recently the TCF awarded \$4,000 in start-up funds to help get this project off the ground, and the TSA contributed \$2,000. We are excited about the enormous potential that this program offers, and we are pleased to be involved as a partner. In order to increase our support, the TSA will soon launch a dedicated funding campaign, so stay tuned as *we expand the TSA global network*.



A local villager along the Setiu river proudly displays a female *Batagur* that he is holding until she lays her eggs. This village works well with Professor Chan, selling her eggs for the headstart program, then releasing the females. Setiu river once supported a major nesting area but numbers have dropped off dramatically in recent years. The site is near KUSTEM where a new conservation program offers hope for *Batagur* recovery in this region.

For many years, the Malaysian Fisheries Department has hatched eggs and headstarted and released tens of thousands of young *Batagur*. Unfortunately, there has been minimal follow-up monitoring of these releases, and the percentage that survives is still a mystery.

Also of concern is the unknown TSD effects of artificially incubating all these eggs. Could they be flooding the population



Newly hatched mangrove terrapins take their first peek at the world.



Myanmar: Assurance Colony for the Burmese Roofed Turtle



Of all the turtle species endemic to Myanmar, the Burmese roofed turtle, *Kachuga trivittata*, is certainly the most critically endangered and, in fact, is believed to be precariously close to extinction. From 1935 to 2002, no live specimens were recorded and no captive specimens were known to exist. However, thanks to the alert efforts and foresight of noted chelonian biologist and conservationist Gerald Kuchling (Chelonia Enterprises), three specimens (1.2) were located in a temple pond in 2002 and transferred to Yadanabon Zoo in Mandalay.



Gerald Kuchling examines a female Burmese roofed turtle with U Tint Lwin, head veterinarian at the Yadanabon Zoo.

Unfortunately, no adequate facilities existed and the turtles were held in the elephant bathing pond. Given the critical nature of the situation, and the urgent need to secure a captive breeding nucleus, Gerald began a campaign to support the construction of new ponds at the Zoo. In February 2003, with emergency funds donated by BTG Studios in Sydney, Australia, and the Allwetter Zoo in Muenster Germany, a large breeding pond was built. Subsequently, specimens of confiscated turtles from traders and fishermen were acquired bringing the holdings to five (1.2 adults and 1.1 youngsters).

According to Kuchling, "*Kachuga trivittata* is in dramatic non-cyclical decline and close to extinction in the wild. Of the world's top 25 most endangered turtles (TCF, 2003), this species is arguably in the top two that most desperately need a captive assurance colony in order to survive" (*Rafetus swinhoei* being the other).

The captive colony at Yadanabon Zoo was created ad hoc and because of a unique opportunity that Dr. Kuchling was able to



The first pond to be constructed for the captive program at Yadanabon Zoo is sufficient for maintaining the present group but additional ponds are needed for quarantine and juvenile rearing.

seize. And though the present pond has given the staff experience with caring for these rare turtles, the challenge now is to set up an adequate assurance colony that will both allow the specimens to successfully reproduce and the program to expand. Facilities to separate males and females, raise juveniles and to quarantine new arrivals should be built. Deep water pools with the ability to flush fresh water through the system are needed. In order to meet these basic requirements and to take this important project to the "next level," a \$10,000 funding package from the Wildlife Conservation Society, TSA, and the TCF was recently announced. However, additional funds will be needed to support this program as *we expand the TSA global network.*



A female *Kachuga trivittata*.



Expanding the TSA's Global Network: A Challenge to the Partnership

The Turtle Survival Alliance (TSA) is an IUCN Partnership Network for Sustainable Captive Management of Freshwater Turtles and Tortoises. We are a recognized task force of the Tortoise and Freshwater Turtle Specialist Group as well as an integral component of the Turtle Conservation Fund (TCF). Our mandate is simple: *Preserving Options for the Recovery of Wild Populations*. Organized in January 2001 in response to the Asian turtle crisis, the TSA was founded on the belief that captive populations would be necessary to prevent the extinction of some species. Today the TSA envisions a broader perspective, one that is involved whenever the conservation strategy includes a captive component. Whether it is headstarting or assurance colony management, the TSA has something to offer. And though the need to develop sustainable captive stocks of critically endangered chelonians is our driving force, the TSA is becoming much more than a captive breeding organization.

Recognizing that the battle to save turtle populations will be won or lost in the regions where they occur, the TSA has embraced the need to expand the global network to include our range country counterparts. Through a process of capacity building, we will work to install the basic components for successful *in situ* turtle conservation activities. Through training workshops (see the article on page three about the first workshop in Singapore) and on site visits, through the provision of materials and technical expertise, through logistical and financial support - the TSA is firmly committed to empowering workers in range turtle states to become effective advocates for turtle conservation. The TSA maintains a strong working relationship with Doug Hendrie and the Asian Turtle Conservation Network, and is now able to respond rapidly to the current needs of our range country partners. We are able to quickly identify funding priorities and, through our close affiliation with the TCF, locate the funds necessary to get the work done.

Increasingly the TSA is becoming recognized as a global force for turtle conservation and is now widely known as the group to call when there is a turtle crisis. Our primary strength lies in the volunteer force that we can mobilize when needed. This is especially true with our veterinary team, many of whom have strong institutional backing. With a diverse partnership of private breeders, zoos, conservation NGOs, veterinarians, academic researchers, nutritionists, field biologists and range country rescue centers, the TSA is uniquely positioned to conduct a wide range of turtle conservation activities, both *in* and *ex situ*. Due to a growing network of supporting individuals and organizations, we are able to rapidly catalyze conservation action for turtles. However, the TSA is capable of doing so much more for turtles. We are constrained only by lack of adequate funding. Please help support us as we expand the TSA global network because *if not TSA, then who?*



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What Can You Do to Help the TSA Save Turtles?

The TSA has developed some crucial global partnerships and is well positioned to have a major impact on turtle conservation in a number of range countries such as India, Vietnam, Thailand, Madagascar, Malaysia and Myanmar. We will only be successful if we can raise the necessary funds to support these grassroots conservation initiatives. We need your help!

YES! I want to help the TSA become a global force for turtle conservation.

My contribution will make a difference. For example:

- \$25 helps the TSA keep you informed of our international efforts in conservation.
- \$50 can fund much-needed turtle conservation awareness materials for the renowned Education for Nature program in Vietnam.
- \$100 can help construct new research and breeding enclosures at the Turtle Conservation and Ecology Project at Cuc Phong in Vietnam.
- \$300 can help construct new headstarting facilities for endangered mangrove terrapins at the KUSTEM facilities in Malaysia.
- \$500 can help fund the Asian Scholarship Program and train an aspiring turtle biologist in conservation methods.
- \$1,000 can help develop a captive-breeding program for the critically endangered Burmese roofed turtle at the Yadanabon Zoo in Mandalay, Myanmar.
- \$2,500 can pay the salary of a PhD student in India to work on turtle conservation for one full year.

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