

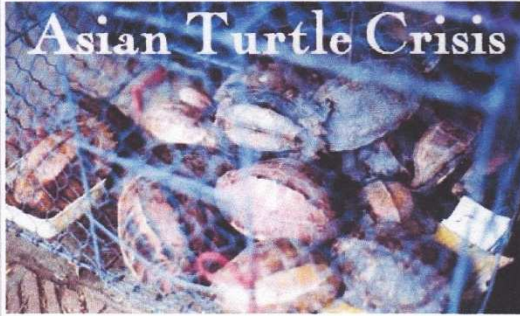
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Asian Turtle Conservation Network



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The Asian Turtle Conservation Network (ATCN) is a non-profit consortium of people, projects and institutions based within the Asia region and actively working to conserve Asia's turtles.



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Evidence suggests that Asia's turtles are being systematically extirpated from nature to feed the insatiable demand from export markets. According to some estimates, as many as 1 million turtles are traded annually in the region, most of these ending up in China where the country's rapidly developing economy has generated demand for expensive foods and traditional medicines made from turtles. Of an estimated 90 species that are native to the region, more than 50% are listed as "Critically Endangered" or "Endangered" on the IUCN Red List of threatened species. [Read More...](#)

The Asian Turtle Conservation Network (ATCN) was established in 2003, to help develop and promote turtle conservation efforts in Asia, and providing a means to share information and improve communication amongst those of us working with turtles in the region.

Thanks for visiting us and please feel free to give your comments or ideas.

ATCNnetwork@fpt.vn

Turtle News

TRAFFIC

Hundreds of tortoises seized in Malaysia (July 16, 2010)

A TRAFFIC story on the seizure of hundreds of tortoises from Madagascar seized from two suspects entering Malaysia. The tortoises included radiated and ploughshare tortoises.

The Last Tortoise (June 22, 2010)

A new book by University of Southern California biologist Craig Stanford highlights the decline of tortoises and freshwater turtles resulting from hunting and trade, mainly to feed the demand from Chinese consumers.

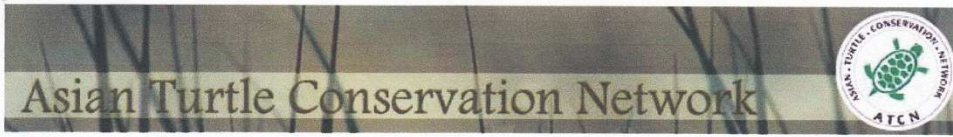
Turtle Survival Alliance

Confiscated Temple turtles to be transferred to US (August 30, 2010)

A brief news summary from TSA on the planned transfer of 50 *Heosemys annandalii* that were confiscated in February 2010 in Hong Kong to long-term placement facilities in the USA.

Big-headed Turtles Returned to Nature in Myanmar (August 5, 2010)

35 big-headed turtles were released in at a wildlife sanctuary in Myanmar following their confiscation in July.



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Each year, thousands of turtles are confiscated in Vietnam from the illegal wildlife trade by wildlife protection authorities. Due to lack of resources, many of these animals are either returned to traders or released back into the wild with little consideration given for health of the animal, natural range, or habitat requirements. Through your support we can rescue more turtles before they reach the soup pot.

<p>ADOPT A TURTLE</p> <p>Adopt a turtle and cover the costs of feeding and caring for your turtle at one of the region's rescue centers.</p> <p>Find out more...</p> 	<p>DONATE</p> <p>Donate to the ATCN, and support turtle conservation by funding programs in education, protection, rescue, breeding and research.</p> <p>Find out more...</p> 	<p>TURTLE STORE</p> <p>Support Asian turtles by buying turtle products online. Get turtle postcards, a turtle poster or t-shirts.</p> <p>Go to the store...</p> 
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92% of your support goes directly to the frontlines of turtle conservation.

Having survived on the earth for more than 250 million years, turtles may not be well adapted to surviving in a modern world dominated by humans. Hunting and trade of tortoises and freshwater turtles in Asia has precipitated an unprecedented crisis within the region that immediately threatens the survival of more than a dozen species, while other species remain under intense pressure from exploitation levels that can not possibly be sustained.

Urgent action is needed to protect Asian turtles. Project activities need to focus on both developing sustainable approaches to conserving turtles and responding to the immediate needs of some of the most critically endangered species.



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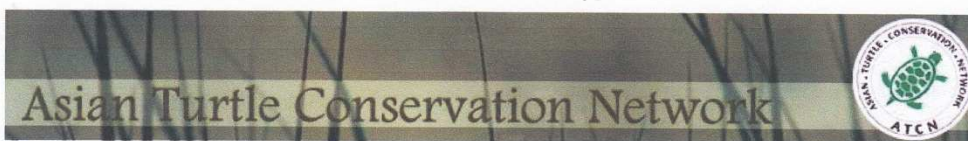
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Center for Disease Control – US Govt.

Human Trichinosis after Consumption of Soft-Shelled Turtles (Posted December 1, 2009)

A paper by Yi-Chun Lo et al. reporting on the outbreak of human trichinosis in Taiwan from eating soft-shell turtles.

Turtle Survival Alliance – (Posted September 25, 2009)

Myanmar Workshop on Chelonian Conservation

A report on a workshop held in Myanmar in January 2009 focused on developing a species recovery plan for the Burmese roof turtle (*Batagur trivittata*) and assisting authorities in dealing with confiscated turtles.

Zootaxa

New subspecies of the mangrove terrapin, *Batagur affinis*, described (Posted September 17, 2009)

A new paper in Zootaxa identifies populations of *Batagur affinis* living on the eastern Malay peninsula, Thailand, and Cambodia as a new subspecies, based on analysis of samples from Cambodian turtles. The subspecies is named *Batagur affinis edwardmollii*.

Farkas, Balazs and Uwe Fritz, 1998. On the identify of *Rafetus swinhoei* (Gray, 1873) and *Pelochelys maculatus* (Heude, 1880). Zoologische Abhandlungen, State Museum fur Tierkunde Dresden, Band 50, No. 5

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Farkas, Balazs and Robert Webb, 2003. *Rafetus leloii* Ha Dinh Duc, 2000 – An invalid species of softshell turtle from Hoan Kiem Lake, Hanoi, Vietnam. Zoologische Abhandlungen (Dresden) 53:107-112.

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Farkas, Balazs L., 1992. Wiederentdeckung eines Exemplars von *Rafetus swinhoei* (Gray, 1873) im Naturhistorischen Museum Wien. Salamandra 28:2 145-152.

Contact author:

Contact the ATCN for help: ATCNnetwork@fpt.vn

Asiatic Herpetological Research – Posted April 15, 2009

Observations on the influence of seasonality, lunar cycles, and weather conditions of freshwater turtle activity in Sarawak, East Malaysia (Borneo)

A paper by Jensen and Das published in 2008 resulting from a trapping study at two sites in eastern Sarawak.

Jensen, Karen A. and Indraneil Das, 2008. Observations on the influence of seasonality, lunar cycles, and weather conditions of freshwater turtle activity in Sarawak, East Malaysia (Borneo). Asiatic Herpetological Research, Vol. 11, Pp. 37-42.

ATCN – March 23, 2009

New paper on phylogeography of black-breasted leaf turtle (*Geoemyda spengleri*)

A paper by Shiping Gong et al., explores the genetic differences between populations of *Geoemyda spengleri* within China and northern Vietnam, noting that the species can be divided into three clades; two in China and one in Vietnam.

University of Bengkulu – January 26, 2009 (posted)

Integrating Turtle Conservation in Education of Elementary School Students in Indonesia

A report by **Dr. Aceng Ruyani** on a new education program focused on conservation of turtles implemented in a middle school in Bengkulu city of southwestern Sumatra, Indonesia.

TRAFFIC – January 9, 2009 (posted)

Illegal trade of Malaysian box turtles in Malaysia

A new TRAFFIC report details an investigation into the illegal trade of Southeast Asian box turtles (*Cuora amboinensis*) in Malaysia. Scientists estimate at as much as 22,000 box turtles may be exported illegally from Malaysia each year.

Gauhati University – December 7, 2008 (posted)

Soft-shell turtle deaths at sacred temple unexplained (India)

A report by Chittaranjan Baruah of the Department of Zoology of Gauhati University about the unexplained death of at least 13 soft-shell turtles of two species in the lake.

Reptilia - September 2008

Rediscovery and First Breeding of the Yunnan Box Turtle

An article in Reptilia details the first documented captive breeding of the critically endangered Yunnan box turtle.

Chelonian Research Foundation - June 13, 2008

Chelonian Research Monographs: *Pelochelys cantorii*, Asian giant soft-shell turtle

A new paper by Indraneil Das on the life history and ecology of the giant Asian soft-shell turtle.
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Chelonian Research Foundation – June 13, 2008

Chelonian Research Monographs: *Caretochelys insculpta*, the pig-nosed turtle

A new paper by Arthur Georges et al. on the life history and ecology of the Fly River turtle/Pig-nosed Turtle.
ATCN library: ATCNetwork@fpt.vn

TRAFFIC – Posted June 2, 2008

A report on the freshwater turtles and tortoises pet trade in Jakarta, Indonesia by TRAFFIC. Released in January and now available in the ATCN Library.

ATCN Posting - May 26, 2008

Diversity of Asian leaf turtles (New paper)

One of two papers recently published on the diversity of Asian leaf turtles (*Cyclemys*) published by the Norwegian Academy of Science.

ATCN Posting - May 26, 2008

Asian Leaf Turtle Clarified (New Paper)

A new paper in the Biological Journal of the Linnean Society clarifies the diversity of Asian leaf turtles (*Cyclemys*) based on DNA studies.

Magnolia Press – Posted May 2, 2008

Naming one of the world's rarest chelonians, the southern Batagur

A paper published in 2008 splits *Batagur baska* into two species; *Batagur baska* historically distributed from Pakistan to Myanmar and *Batagur affinis*, distributed in the southern Malay peninsula and Sumatra. The taxonomic identification of *Batagur* in northern Malaysia, Thailand, and Cambodia remain unclear.

ATCN Note: This paper is available in the ATCN online library with permission from the author.

The Indonesian Institute of Sciences – May 1, 2008 (posted)

The endangered Sulawesi tortoise (*Indotestudo forstenii*): Behavior, habitat, population in the wild, and harvest level

An interim report to the TCF by Awal Riyanto, Achmad Farajallah, and Jarot Arisona on a study carried out in late 2007 examining the status of the forest turtle of Sulawesi.

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Asian Turtle Program - April 8, 2008

The Legend of Hoan Kiem turtle

A translation of the legend of the Hoan Kiem turtle

Contributions to Zoology – October 24, 2007 (posted)

Trade in non-native, CITES-listed, wildlife in Asia, as exemplified by the trade in freshwater

turtles and tortoises (Chelonidae) in Thailand

A paper highlighting the trade of non-native tortoise and freshwater turtle species that are listed under CITES in Bangkok's weekend market.

Turtle Survival Alliance – (Posted August 7, 2007)

TSA Newsletter

A full E-version of the August 2007 TSA newsletter

Asian Turtle Program – April 2007

Assessing the potential of a localized conservation initiative focused on the critically endangered Indochinese box turtle (*Cuora bourreti*)

The results of a field survey in Song Thanh Nature Reserve carried out by the Asian Turtle Program in preparation for a new project focused on in-situ conservation of *Cuora bourreti*.

ENV – December 2006

Marine Turtle Survey Indicate Success of Enforcement Efforts

A survey by ENV and WCS of shops in Hanoi selling marine turtle products suggests that government enforcement efforts were successful.

Reptilia No. 41 – 2006

Captive Breeding of Chelonians in Hainan Province, China

An article from Reptilia Magazine on the results of a November 2004 survey of turtle breeding farms in Hainan. Hainan farms are churning out tens of thousands of several native and non-native species to supply markets.

Testudo Vol. 6 No. 3 (2006)

Biological Observations on the Asian Softshell Turtle in Sarawak

A paper by Karen Jensen and Indaneil Das on a study of *Amyda cartilaginea* in Sarawak, Malaysia.

Perth Zoo – Winter 2006

Turtles in Crisis

An article in the Newspaws, the Perth Zoo newsletter on the Asian turtle crisis featuring some of the efforts of the Turtle Conservation Center at Cuc Phuong National Park.

Baer and Associates – November 2006

Special Report on Vietnam Turtle Diets

The published results of a study examining the captive diet of turtles maintained at the Cuc Phuong Turtle Conservation Center in Vietnam. Facilitated by the WCS Wildlife Health Sciences Division and Baer and Associates, LCC.

WCS Myanmar – September 2006

Chindwin River Freshwater Turtle Project progress report,-2006

A report by the WCS Myanmar Turtle Conservation Team on progress of the Chindwin River *Kachuga trivittata* Conservation Project, September 2005- August 2006.

WCS Indonesia – September, 2006

A Survey to Determine the Conservation Status of Endemic Chelonians in Northern Sulawesi, Indonesia

A report by Steve Platt on the results of surveys carried out in July 2006 focused on *Indotestudo forsteri* and *Leucocephalon yuwonoi* in Sulawesi.

August 2006 - Cambodian Turtle Conservation Team

Cambodian Turtle Team works with local communities to increase knowledge and interest in conserving turtles

A report by Sitha Som of the Cambodian Turtle Conservation Team on their August training initiative in several villages within the Cardamom Mountains.

2006 - Conservation Genetics

Recent hybrid origin of three rare Chinese turtles

A recent publication by Stuart and Parham on three suspected hybrid turtles species from China; *Ocadia glyphistoma*, *Ocadia philippeni*, and *Sacalia pseudocellata*.

2006 - Proceedings of the Entomological Society of Washington

Ticks: Vectors for Disease Transmission in Turtles? (pdf)

A paper summarizing the findings of a study on host-parasite relationships between ticks and turtles

carried out at Cuc Phuong National Park.

April 2006 - Turtle Conservation and Public education program in upper Chindwin River (pdf)

A report on efforts to conserve *Kachuga trivittata* on the Chindwin River in Myanmar in 2005-2006. Report by Win Ko Ko of WCS

February 2006 - Report on the Prek Youn Field Survey in the Cardamom Mountains of Cambodia (pdf)

A report by Sitha Som and the Cambodian Turtle Conservation Team field team on the results of February surveys in the Prek Youn area of the Cardamom Mountains in Cambodia.

February 2006 - New report documents trade of Roti Island snake-necked turtle

TRAFFIC has released a new report, "[The Trade of the Roti Island Snake-necked Turtle, *Chelodina mccordi*](#)" by Chris Shepherd and Bonggi Ibarrondo. The report provides an excellent overview of the status and trade of this critically endangered species, endemic Roti Island in Indonesia

February 2006 - Rafetus observation and interview report (pdf)

Interview and Observation Study Focused on Behaviour of the Swinhoei's Softshell Turtle (*Rafetus swinhoei*) in Hoan Kiem Lake, Hanoi, Vietnam

Report By: Nguyen Xuan Thuan, Tim McCormack, Douglas Hendrie

January 2006 - Antioch University of New England

Conservation of Sulawesi endemics, *Leucocephalon yuwonoi* and *Indotestudo forstenii* (pdf)
A copy of Ian Ives' Masters thesis made available to the ATCN with permission from the author.

October 2005 - Conservation Fund - Auckland Zoo Newsletter (pdf)

August 2005 - BP Project Report - Stoeng Kep River (pdf)

Endemic Species in Sulawesi, Indonesia (pdf)

A photographic documentation of preliminary field research carried out by Ian Ives, M.S. candidate researcher in Sulawesi, February 19-27, 2005.

TRAFFIC Bulletin (Vol. 20 No. 1) (pdf)

Features an article on the harvest and trade of reptiles at U Minh Thung National Park, southern Viet Nam as well as an update on the ivory industry in Thailand, Myanmar and Viet Nam, a full list of CITES amendment proposals for the forthcoming 13th Meeting of the Parties to CITES, seizures and prosecutions related to trade in wild animal and plant resources as well as recent news from the field

Demand Driven: The Trade of Indian Star Tortoises *Geochelone elegans* in Peninsular Malaysia (pdf)

Chris R. Shepard, Elizabeth A. Burgess, Maple Loo, a TRAFFIC Southeast Asia Report

Recent Records of Turtles and Tortoises from Laos, Cambodia, and Vietnam (pdf)

Bryan Stuart and Steve Platt, published in Asiatic Herpetological Research (Volume 10, pp.129-150)

December 14, 2004 - Summary of Research by the Cambodian Turtle Conservation Project Phnom Penh (pdf)

Report from the BP funded Cambodian Turtle Conservation Project documenting results and recommendations from a recent field study carried out in the Areng Valley in the Central Cardamoms Protected Forest.

July 28, 2004 - Differentiating Male and Female River Terrapin (*Batagur baska*) (pdf)

Report by Chris Tabaka, of the Detroit Zoological Institute, looking in to the different methods that can be utilized to sex *Batagur* depending on the age of the specimen in question.

June 21, 2004 - Turtle Conservation Fund - Species Recovery Plan for *Batagur baska* (pdf)

Presentation given by Dr Hugh Quinn of Cleveland Metroparks Zoo and John Behler of Wildlife Conservation Society on 16 December 2002.

May 20, 2004 - Conservation of the endangered Golden Coin Turtle *Cuora trifasciata* in Hong Kong - Problems and Solutions (pdf)

Report by Dr. Michael Lau, Senior Conservation Officer at Kadoorie Farm and Botanic Garden.

*May 18, 2004 - Assurance Colony for *Kachuga trivittata* in Yadanabon Zoo, Myanmar (pdf)*
Gerald Kuchling Report documents the status of an assurance colony of *Kachuga trivittata* (Roofed Turtle), held in captivity in Yadanabon Zoo, Myanmar, March 2004.

*May 4, 2004 - Natural History of the River Terrapin (*Batagur baska*) in Cambodia (pdf)*
Wildlife Conservation Society's (WCS) Research Program report by Rohan Holloway, 2003.

April 17, 2004 - Sang Poh Temple Site Visit Report (Malaysia) (pdf)
At the Sang Poh Buddhist Temple over 100 turtles, of at least 6 different species live in its overcrowded pond.

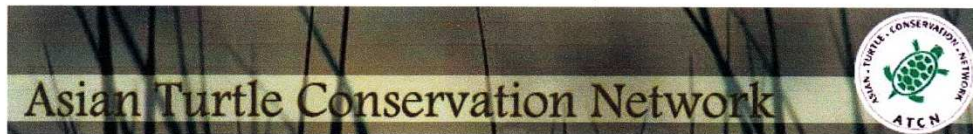
March 15-19, 2004 - Report of The Turtle Conservation Centre in Cuc Phuong (Vietnam) (pdf)
Report on site activities at the Turtle Conservation Centre (TCC) in the Cuc Phuong National Park
WCS Field Veterinarian Dr Bonnie Raphael.

*February 17, 2004 - Commercial Farming of *Palea steindachneri* in Hanoi (pdf)*
Investigation by Wildlife Conservation Society's (WCS) Doug Hendrie into the *Palea steindachneri* farming facility in Hanoi, Vietnam.

December 2003 - Southeast Asian Turtle Trade Fact Sheet (pdf)
A fact sheet on the Asian Turtle Crisis Produced by WCS

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Integrating the Message of Turtle Conservation into a Science Teaching Plan for Elementary School in Bengkulu City, Indonesia#

Aceng Ruyani 1#.

1Program Studi Pendidikan Biologi, FKIP, Universitas Bengkulu, Jalan Raya Kandang Limun, Bengkulu, Indonesia.

ABSTRAK

Penelitian ini bertujuan mengembangkan model Rencana Pelaksanaan Pembelajaran (RPP) IPA untuk meningkatkan pengetahuan dan apresiasi siswa tentang keberadaan kura-kura. Model diperuntukkan bagi siswa SD kelas V dengan waktu bagi setiap RPP sekitar 80 menit menggunakan delapan spesimen kura-kura hidup (*D. subplana*, *A. cartilaginea*, *M. emys*, *H. spinosa*, *N. platynota*, *C. odhamii*, *S. crassicolis*, and *C. amboinensis*) dan bahan cetakan. Posttest dan pengukuran sikap dilaksanakan satu pekan setelah penerapan RPP. Lima belas guru IPA berpartisipasi dalam workshop untuk sosialisasi model, kemudian mereka menerapkan model itu di masing-masing sekolah yang secara keseluruhan melibatkan 515 siswa. Data kuantitatif menunjukkan bahwa rata-rata skor pretest adalah 47,5 yang berarti sebagian besar siswa tidak mengenal baik reptil tersebut. Keberhasilan penerapan RPP dihitung berdasarkan selisih antara pretest dan posttest, menunjukkan pengetahuan siswa (63,8) nyata meningkat (35,2%) setelah implementasi. Sementara tingkat apresiasi keberadaan kura-kura adalah 47,4 yang tergolong sangat baik dan memiliki korelasi ($r=0.6$) dengan skor posttest. Dapat disimpulkan bahwa aplikasi model nyata dapat meningkatkan pengetahuan siswa SD yang terkait dengan tingkat apresiasi mereka tentang keberadaan kura-kura.
Kata kunci: Kura-kura, pendidikan konservasi, sekolah dasar

ABSTRACT

This research was aimed to develop a model of Science Teaching Plan (STP) to increase knowledge and appreciation of student about existing turtles. The model focused on fifth grade class of elementary school (SD), and duration of each STP was 80 minutes using eight live turtle specimens (*D. subplana*, *A. cartilaginea*, *M. emys*, *H. spinosa*, *N. platynota*, *C. odhamii*, *S. crassicolis*, and *C. amboinensis*) and printed materials. Posttest and attitude measurement were performed separately one week after completing the STP. Fifteen science teachers participated on the workshop to socialize the model, and then each of them implemented it at their classes which were involved the amount of 515 students. Quantitative data revealed that average score of pretest is 47.5 that means majority of students were not know well the reptiles. Achievements of the STP were calculated by gap between the both tests; it revealed that knowledge of students (63.8) about the matter increased (35.2%) significantly after the implementation. Meanwhile degree of appreciation concerning the existing turtles was 47.4 which classified as "excellent" and has a correlation ($r=0.6$) with the score of posttest. It can be concluded that the model can increase significantly the knowledge of SD students about the matter which is linked with the degree of their appreciation concerning the existing turtles.

Key words: Turtle, conservation education, elementary school

#Presented on "Seminar Internasional Pendidikan IV", Bengkulu, Indonesia, December 6, 2008.*Corresponding author, E-mail: ruyani@lycos.com

INTRODUCTION

Some published scientific reports (Ernst and Barbour, 1989; Iskandar, 2000) explained the present of tortoise and freshwater turtles in Sumatra, they recorded 15 species in the island, but unfortunately it is limited special report from Bengkulu province. Rizwar *et al.* (1998) reported that at Lebong district, Bengkulu, could be identified *D. subplana*, *A. cartilaginea*, *H. emys*, *H. squinosa*, *C. dentata*, *S. crassicolis*, *C. Odhamii*, *N. platynota* and *C. amboinensis*. Meanwhile previously survey (Malvianti *et al.*, 2007; Fitri *et al.*, 2007; Puspitasari *et al.*, 2007; Novieta *et al.*, 2007) revealed that that *C. dentata* was not found at the field or local trade, and *M. emys* is rare animal in Bengkulu. The facts are caused by several aspects such as highly demand, restricted habitat, lowly fertility, and lacking domestication (Kursini and Yazid, 2005). Bengkulu was harvesting area and participates as an upstream of global trading of the reptiles. It should be noticed that turtles for majority people in Bengkulu are viewed as a commodity only which are not linked with their cultural requirement. Collected live turtles from the province are transported to Jakarta enter into the turtle distribution process both inside and outside of Indonesia (Aeschylus, 2004). Recently in Bengkulu the reptiles are more profitable to trade in dried carapace and plastron form (Novianti *et al.*, 2007), the modus is not easy to recognize by low enforcement, therefore it caused many turtles have to be scarified for the purpose. Since wild management up till now is not yet fully adopted by the local government of Bengkulu, therefore high demand of turtles is never followed by sustainable efforts for the reptiles. Meanwhile several preliminary investigations revealed that *D. subplana*, *C. Odhamii*, *C. amboinensis* are profitable species to breed commercially in Bengkulu (Syarifudin and Ruyani, 1998; Yufitri *et*

et al., 2007; Malinda *et al.* 2007; Evrianti *et al.*, 2007). The ideal wild management has to indicate that general law enforcement towards protection of natural resources should be improved, a culturally appropriate effort for increasing young peoples' knowledge, appreciation, positive attitude, environmental awareness, and involvement in elementary school (SD) is necessary as a part of holistic conservation efforts.

A widely and well received postulate has stated that early elementary education is most effective in developing personal internalization of environmental awareness and appreciation in students (Muhibbinsyah, 1997). Furthermore Munandar (1985) stated that students on the fifth grade class of SD (11-12 years old) are characterized by (a) more interest to practical daily activity, (b) very realistic, curious, and wish to learn, (c) interest to specific subject matters, and (d) need adult person or teacher as a guidance for reaching their obsessions. Of course we agreed that conservation education program is moral responsibility from one generation to the next (Primark, 1998). Willcockson (2005) recommended that conservation teaching in SD would be organized by (1) building around systematic units, (2) scientific principles, (3) geographic and ecological units, and (4) reference to the context in social science. Subjects on the fifth grade class of SD curriculum, natural science especially, could be integrated pedagogically by turtle conservation messages via a model of science teaching-plan (STP) to increase knowledge and appreciation of student about the existing turtles.

Based on mentioned above, integrating the message of turtle conservation into a STP is necessary to implement. Furthermore the obtained model hopefully could be applied later as the supplement message of turtle conservation for local curriculum at certain SD in Indonesia.

MATERIALS AND METHODS

1. Live specimen collection of turtles

Limited number live specimen of *D. subplana*, *A. cartilaginea*, *M. emys*, *H. spinosa*, *N. platynota*, *C. odhamii*, *S. crassiocollis*, and *C. amboinensis* were collected from some regencies in Bengkulu province, Indonesia, and then cared out at the Biological Garden, inside the campus of Bengkulu University. The eight live specimens were used as the resources in preparing printed materials especially such as photos, leaflet, poster, and module.

2. Preparation of printed materials

A standard competency requirement, which was explicitly stated on the effective curriculum of SD (Depdiknas, 2004), "student could identify pattern of organisms adaptation in their environment" was used as the main consideration to supplement the message of turtle conservation in designing the scenario of STP. All printed materials include module, photo, leaflet, poster, pretest, posttest, and attitude test were prepared in Bengkulu. Each of the materials was designed for special propose as a part of the whole mission to increase knowledge and appreciation of student concerning the turtles. Short descriptive and special propose of the materials (Fig. 1) are presented below.

The module was only prepared as a teacher reference of turtle education program during the real class implementation. It has to explain here about outline of the teacher reference. The module contains 20 pages in A4 size paper format which is divided into five chapters include; introduction, how to know turtles, kind of turtle in Bengkulu, STP activities, and closing. The module tried to give science teachers some rationales concerning the important of turtle conservation. It is received widely that competency of science teachers are not only indicated by their understanding about natural phenomenon but also should be followed by their ability to make an excellent learning atmosphere. The chapter of STP activities recommended some learning oriented in attempting to increase knowledge and appreciation of student concerning the exiting turtles. The core activities are subsequently include observation and discussion concerning; (1) simple method to recognize kind of turtles, (2) turtle behavior and their habitat, (3) turtle rescue from the destructive condition. Some aspects of integrating turtle conservation message into regularly STP on SD was adapted from the established module (Kardi *et al.*, 2006).

Photos of the eight live specimens were made in colorful and postcard size which would be applied in some educative simulations during the real class implementation. One set of the photos contains eight postcards, and every the real class implementation required minimal three sets. This teaching aid could be used on every STP processes.

Leaflet was designed in A4 paper size with double side colorful printed about photos of the eight live specimens. One side expressed concerning the message of turtle conservation, and the other side explained habitat and general behavior of the turtle collections. Every student could obtain the leaflet for themselves, as consequence, it should be printed more than 700 pieces. Poster contains the message of turtle conservation which was designed with one side colorful printed in two sizes; 63 x 44 cm and 40x 25 cm. The posters could be used in both teaching aid and public propaganda.

Both pretest and posttest were prepared on objective test form with four options to measure knowledge (cognitive) achievement about the existing turtles according to the competency indicators that have been determined previously. Basically the pretest and posttest are equal in the purposes and it is only some sentence modifications between the both (Nurkancana and Sumartana, 1983).

Attitude test contained several statements about the existing turtles, and then student's immediately response concerning the statements could determine their appreciation, positive attitude, and environmental awareness (Nurkancana and Sumartana, 1983; Sukmadinata, 2005). This attitude measurement was performed together with the posttest one week after completing the STP.



Fig. 1 The printed materials include module, photo, leaflet, poster, pretest, posttest, and attitude test were prepared for each targeted SD in Bengkulu City.

3. Workshop of turtle conservation.

In 2004, all SD in Bengkulu City were decided as target area of Science Education Quality Improvement Project (SEQIP; organized by the Deutsche Gesellschaft fuer Technische Zusammenarbeit (GTZ) Jakarta Office, and Dr. Aceng Ruyani, biologist, a senior educative staff of Bengkulu University, acted as the consultant for the project. SEQIP developed a model of STP for SD which is principally adopted the constructivism approach contains three stages are introduction, core, and resolution (Aryulina, 2005). SEQIP 2004 selected seventeen science teachers to train them concerning some effective strategy how to prepare, teach, and evaluate science for SD student. The six steps of successive SEQIP training were performed during the period of eight months, and then obtained seventeen science teachers (called Pemandu Bidang Studi; PBS) whom have highly competency and commitment to improve science education at their group of SD (Gugus) in Bengkulu City. The trained seventeen science teachers were invited to participate on the workshop of turtle conservation education program to make the same interpretation concerning both goal and procedures for the purpose.

The workshop was performed, January 27, 2007, at SDN 09 in Bengkulu City, was attended by fifteen PBS and five undergraduate biological education students of Bengkulu University. Based on the prepared module of teacher reference, participants of the workshop used it to look a procedure how to supplement and teach turtle education through the regular STP for SD. On this stage, Bhakti Karyadi, M.Pd, an educative staff of Bengkulu University whom has been trained by GTZ Jakarta Office, participated as a teaching model for the workshop.

4. Implementation of turtle conservation on the real class.

Implementation of turtle conservation on the real class was performed during period of February 15-28, 2007 by the fifteen PBS of SD and each of them were assisted by two undergraduate biological education students of Bengkulu University. The prepared module and some recommendations of the workshop were applied by the fifteen PBS on their regular STP for SD. This stage was aimed to increase student's knowledge, perception, attitude, and awareness about the existing turtles, then to stimulate their personal internalisation, make the new generation more informed and involved for a sustainable turtles.

After finishing the implementation of turtle conservation education program, students hopefully could; (1) Know simple minimal three methods to recognize kind of turtles (Maita *et al.*, 2007). (2) Know well minimal four kinds of turtle and their habitat which were exciting in Bengkulu province. (3) Understand minimal three steps of turtle rescue when students found the reptile in their environment. These two cognitive and one psychomotor competency are not significant progress without followed by transformation of student's attitude. Simple indicator for its attitude transformation could be expressed through measurement degree of student appreciates about the exiting of turtles.

According to the SD curriculum remains effective (Depdiknas, 2004), the implementations were targeted on fifth class of SD (11 years old), and duration of each STP was about 80 minutes. Live turtle specimens and printed materials (module, leaflet, photo, poster, pretest, posttest, and attitude measurement) were prepared for every location of targeted schools. Teaching procedures of turtle conservation basically followed the scenario which is planned on the module; meanwhile improvisation could also be created according to the workshop recommendations and personal style of each teacher.

There are seven successive steps of each STP processes; (a) pretest, (b) introduction, (c) core activities, (d) resolution, (e) posttest, and (f) student's attitude measurement. The core activities are subsequently include observation and discussion concerning: (1) simple method to determine kind of turtles, (2) turtle behavior and their habitat, (3) turtle rescue from some destructive conditions. Posttest and student's attitude measurement were performed separately one week after implementing the STP.

Table 1. The real class implementation of turtle conservation education program which was involved fifteen trained science teachers (PBS) and 515 students of elementary school (SD) in Bengkulu City.

No.	Location of elementary school (SD)	Name of Science Teacher	Number of student	Knowledge			Attitude		
				Pretest [a]	Posttest [b] (x)	Result [b-a](%)	Score (y)	Category	r
1	SDN 01 Bengkulu	Latifah	44	57.6	65.6	8.1(14.1)	48.2	Excellent	0.5
2	SDN 52 Bengkulu	Zahara	33	53.9	59.8	9.4(17.4)	49.0	Excellent	0.4
3	SDN 06 Bengkulu	Kasidi	23	34.4	62.6	27.5(80.1)	46.6	Excellent	0.6
4	SDN 67 Bengkulu	Arsalna	29	49.3	72.1	22.4(45.4)	49.0	Excellent	0.9
5	SDN 75 Bengkulu	Salmi	47	28.7	60.3	32.2(112.1)	48.9	Excellent	1.0
6	SDN 27 Bengkulu	Zuliarti	25	53.2	57.6	4.4(8.3)	48.3	Excellent	0.2
7	SDN 71 Bengkulu	Hartini	49	45.3	60.3	15.0(33.0)	48.1	Excellent	0.4
8	SDN 09 Bengkulu	Sri Sudarti	24	58.8	59.8	1.0(1.7)	47.3	Excellent	0.8
9	SDN 86 Bengkulu	Ristianah	25	45.4	55.5	9.0(19.8)	44.5	Good	0.5
10	SDN 58 Bengkulu	Neti Suryani	36	24.2	76.4	52.5(217.1)	47.4	Excellent	0.5
11	SDN 05 Bengkulu	Neti Herawati	41	54.9	62.8	8.4(15.3)	49.3	Excellent	0.9
12	SDN 73 Bengkulu	Priyanti Yohana	35	49.4	53.9	5.3(10.8)	42.6	Good	0.7
13	SDN 74 Bengkulu	Nilailah	40	53.0	71.4	20.3(38.3)	45.8	Good	0.7
14	SDN 20 Bengkulu	Ika Purwanti	35	61.1	76.0	15.0(24.5)	51.1	Excellent	0.2
15	SDN 51 Bengkulu	Uniarti	29	43.8	63.7	20.5(46.9)	45.2	Good	0.6
Total/average			515	47.5	63.8	16.7(35.2)	47.4	Excellent	0.6

Note:

- a. r = coefficient correlation between Posttest (x) and Attitude score (y)
- b. Attitude score category: >15 = bad; 16-30 = enough; 31-45 = good; 46-60 = excellent

RESULTS AND DISCUSSIONS

The fifteen PBS in Bengkulu City could adopt easily the idea of integrating turtle conservation message into the regularly STP for SD. Their enough experiences with the model of STP and socialization through the workshop were really useful for supporting the program (Fig.2) A problem was appeared when they have to realize "a concept of the first hand experience in science education", the PBS not able to prepare live turtle specimen as a resource of learning in their class. In solving the problem, it was absolutely necessary to prepare time schedule how to move the live specimen collection of turtles in fresh condition from ones SD to the next. Fortunately in this context each implementation of STP was assisted by two undergraduate students of Bengkulu University



Fig.2 One of the fifteen PBS in Bengkulu City implemented the idea of integrating turtle conservation message into regularly science teaching plan (STP) on elementary school (SD).

General student's impression indicated that the model of STP was interesting and previously they never see or touch directly the existing animals (Fig.3). It was really the first hand experience for them and then they also agreed with message of their teacher; "Know, lovely, and protect the existing of turtles!". Furthermore obtained qualitative data from the implementation which was involved the amount of 515 students is presented on Table 1. The obtained data revealed highly variety that means student condition of the fifteen targeted SD are heterogeneous in some aspects. It should be noticed that Bengkulu City is not the big city like as Jakarta or Surabaya, in the border of the city is still easy to find some natural habitat, meanwhile unfortunately average previous knowledge about turtles is really low (47.5). The reality may be caused by the turtles are not present in around of the city or majority of the students have no enough experience to familiar with their environment. Some experts in education agreed that indicator degree of the effective STP is not fair if it calculated only by the final results, but it should be considered by the gap between pre- and posttest (Sukmadinata, 2005). Of course the effective model of STP is also depend on teacher's performance as the facilitator during the activity. On this context, Neti Suryani, from SDN 58 Bengkulu, could appear the best achievement (52.5) compared the others. According to the fact, she is reasonable to note hers as the potential SD teacher in science. It could be generalized that the model of STP implementation on fifteen targeted SD increased significantly (35.2%) knowledge of students about the matter. Furthermore the model could be recommended to apply later as

the supplement message of turtle conservation for local curriculum at certain SD in Indonesia.

Attitude means personal immediately appreciation and awareness as response to certain environmental conditions in form social and/or physical stimulus (Nurkencana and Sumartana, 1983). It is widely believed that knowledge is an important factor in developing some attitudes and then the internalized attitudes will be expressed later in certain behavior (Mar'at, 1982; Sukmadinata, 2005). The model of STP tried to improve student's knowledge about turtle conservation through the real class activity. Quantitative results of the effort revealed that degree of appreciation and environmental awareness concerning the existing turtles is 47.4 which classified as "excellent" and has a correlation ($r=0.6$) with the score of posttest. This degree of appreciation and environmental awareness are psychological internalization process which is necessary be followed by successive and repeat enforcements.



Fig.3 General student's impression indicated that the model of STP was interesting and previously they never see or touch directly the existing turtles. "Know, lovely, and protect the existing of turtles!"

CONCLUSIONS

It can be concluded that the model of science teaching plan (STP) can increase significantly the knowledge of students about turtle conservation which is linked with degree of their appreciation, and environmental awareness concerning the existing turtles.

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