

CONSERVATION AND MANAGEMENT OF AMAZON TURTLES, BRAZIL



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Field work dates:

YEAR	MONTH	DAYS	HIDROLOGICAL SEASON
2009	August	22 a 30	Falling of waters
	October	8 a 21	Dry
	November/ December	10 a 4	Dry
2010	January/ February	23 a 12	Raising of waters
	March/ April	29 a 13	Raising of waters /Flood
	June	02 a 06	Flood
	July	02 a 17	Flood
	August/ September	27 a 04	Falling of waters

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SECTION 1

1.1. SUMMARY

The high and uncontrolled consumption of chelonians has been causing the decline of five species of Amazon turtles. Their conservation status is becoming a subject of high concern in Brazil, however, the size of populations are not well known. In this sense, ecological studies together with environmental education are useful tools to assess the conservation status of the species and develop environmental consciousness of traditional populations. This project aims to begin a conservation and management project in the Unini River to provide information about turtle population status and to call attention to the local people for the need of conservation. A total of eight field trips were done to collect, mark turtles and apply environmental education activities such as children activities and training of beach managers in five villages. Five species of chelonians were collected, in a total of 436 individuals. Red headed turtle was the most frequent species collected, followed by yellow-spotted turtle and big-headed turtle. The sex ratio for red-headed turtle was 0.51♂:0.49♀. The Unini River population had a low number of juveniles, suggesting a low recruitment rate. The results found in this project indicate a not well structured population of the red headed turtle.

1.2. INTRODUCTION

There are 317 species of chelonians in the world of which 200 species are listed as threatened in the IUCN Red List (Bulmann et al., 2009; Rhodin et al., 2008). In the Brazilian Amazon, many of the species are under some degree of threat. The species of the Podocnemididae Family are the most affected due to the uncontrolled consumption and illegal commercialization by humans (Vogt et al., 2001).

The main cause for the decline of freshwater turtles in the world is related to anthropogenic change of habitats. However, in the Amazon the main cause for the decline of species is the uncontrolled consumption of turtles by humans. Between 1848 and 1859, Bates (1876) recorded the collection of eggs corresponding to 400,000 nests of the Giant River Turtle (*Podocnemis expansa*) for the production of lard and oil. At that time, the meat was only consumed locally, supplying the local markets. In the 20th century, with improvement of transportation and access to the cities, the commercialization of turtles in the Amazon became greater and consequently the collection of adults intensified in the whole Amazon as an easy way to make money (Vogt, 2008). A clear result of the turtle business in the Amazon, Brazilian Institute of Environment and Renewable Natural Resources (IBAMA) seized one boat with 38,000 specimens of turtles on their way to being sold in the city of Manaus (Kemenes and Pantoja, 2006).

The inspection of boats is the most efficient measure to tackle the illegal traffic activity. However, the government has been inefficient to inspect all the boats due to the large extension of the Brazilian Amazon territory (Schneider et al., in press). The hardest problem faced to tackle the illegal traffic of turtle is the expansive extension of the Brazilian Amazon territory. There is a law protecting the turtles (n° 5.197) created in 1967 by the federal government prohibiting the hunting of wild animals, but the law is not followed and the government can not inspect all people. Thus, other strategies were taken to influence the conservation of the Amazon turtles. The first strategy was the protection and management of nesting beaches of the Giant River Turtle (*Podocnemis expansa*), because it is the most threatened species. The second was the incentive for local farmers to raise turtles legally and supply the big cities in the hopes of abating the illegal traffic. Both strategies provided

some positive results in increasing the turtle populations, but they reflect a local scale and do not tackle the problem from the top down to achieve its base of non consciences turtle consumption as not sustainable. New actions are necessary, campaigns and environmental education activities involving local populations as well as residents of big cities in the Amazon. If so, future generations will be aware of the problem and be aware of the extinction risk faced by these turtles. But these people must also be concerned for this loss, it is not enough just to be made aware of the fact, most people are, but they must be educated in a manner such that they care and are willing to help species from going extinct.

The integration of scientific studies and environmental education is necessary for the success of any action, campaigns and activities pro conservation. Both areas integrate with each other and might be applied together to make success possible in conservation projects. In this sense, in August 2009 we started the Conservation and Management of Amazon turtles Project in the RESEX do Rio Unini (Fig. 1). We aimed to develop a conciosness in the local population through integrating them in research activities such as nesting beach patrol, monitoring adult individuals and environmental education. Even though there is no record of illegal traffic of turtles in the RESEX do Rio Unini, the intense hunting pressure for local consumption should be managed to avoid the extirpation of the species in this area.

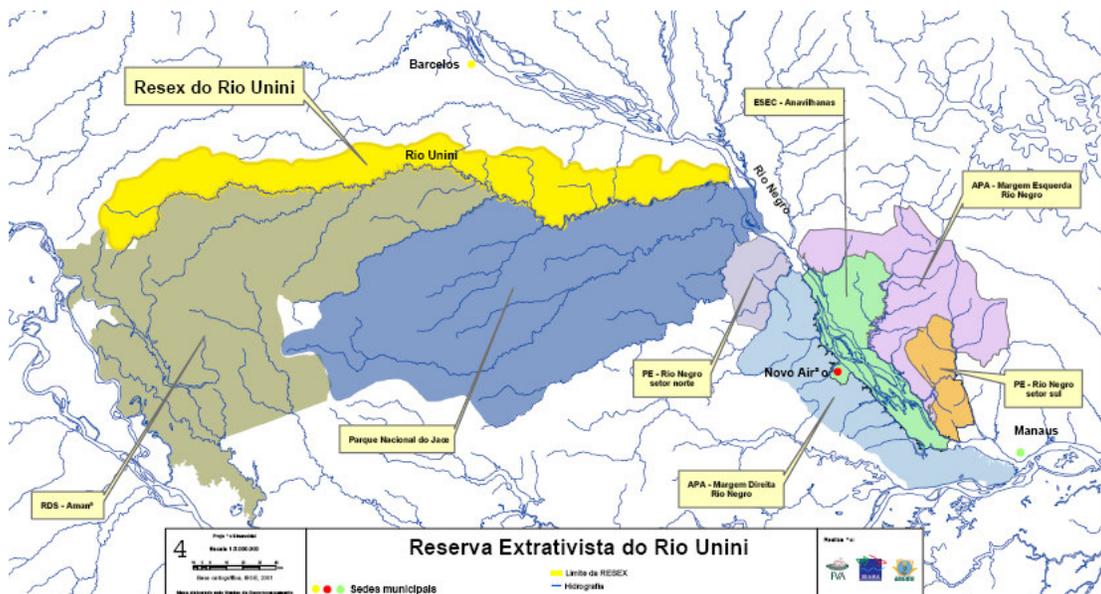


FIGURE 1. MAP OF THE RESERVA EXTRATIVISTA DO RIO UNINI – AM (FVA, 2005).

1.3. PROJECT MEMBERS



Andressa Scabin: Andressa was born in São Paulo where she graduated in Biology. In 2006 she went to Manaus to do her masters at the Instituto Nacional de Pesquisas da Amazônia - Inpa. Andressa is specialist in the Environmental Education area and for that she became a key person in the project to develop the environmental activities.



Camila R. Ferrara: Camila was born in São Paulo where she studied to be a Vet. In 2003 she moved to the Amazon to start her studies about ecology and behavior of turtles. In 2007 she finished her masters about turtle behavior at the Instituto Nacional de Pesquisas da Amazônia and she is currently at the same Institute doing her PhD studying subaquatic communication in Giant Turtles. Camila is the coordinator of this project and has participated in the CLP trainings and of all steps of the project.



Francimara Ribeiro: Francimara was born in the Rio Unini, the place where this study has been done. She was living in the Tapiira Village and moved to a small town when she was seven years old, together with her family, looking for better opportunity to study. In 2008 Francimara became an internship in the Chelonian Lab at INPA and in 2009 she became part of the CLP team to work in the Project Conservation and Management of the Rio Unini Chelonians. Francimara was a very important person to make the field work became succesfull because she was familiar to the residents of the area.



Larissa Schneider Guilhon: was born in Paraná, but she grew up in Mato Grosso do Sul where she graduated in Biology. In 2004, she came to the Amazon to work with research about the ecology and conservation of chelonians at INPA, where she latter did her masters. Currently she is doing her PhD studying the effects of trace metals in animals at the University of Canberra, Australia. Even far from Brazil Larissa was always present helping to solve problems, giving advices and editing reports.



Ladislau Brito: Ladislau was born in Brasilia and in 2006 moved to Manaus to do her masters studing diet of turtles. Ladislau helped in the logistic part of the project and in one field work. He recently became a policeman.



Luana Gama: Luana was born in Rio de Janeiro and about ten years ago she moved to Manaus with her family where she is currently doing her undergraduation in Biology at the Universidade Federal do Amazonas (UFAM). Luana has been an internship in the Turtles Lab since she has started her studies at UFAM when she had the opportunity to integrate our CLP team. She is using part of the data collected in this project to do her final project at the Uni.



Virginia C. D. Bernardes: Virginia was born in São Paulo, but she grew up in Brasilia where she graduated in Biology. In 2007 she came to Manaus looking forward to work with turtles in the Amazon. In 2009 she started her masters at the Instituto Nacional de Pesquisas da Amazônia when she integrated the CLP team. Part of the data collected in this project will result in her masters project.

SECTION 2:

2.1. AIM AND OBJECTIVES

Aim:

The aim of this project is to start a turtle conservation and management work in the *Reserva Extrativista do Rio Unini*, integrating scientific research with environmental education.

Objectives:

- 1) Identify turtles species in the Rio Unini and monitor the main species in this river;
- 2) Monitor nesting beaches to protect and manage the nests;
- 3) Environmental education through capacitation courses for beach patrol volunteers and manage the nesting beaches. Apply environmental education activities with children from five villages of the Rio Unini.

2.2. METHODOLOGY

Preliminar Study

In August 2009, a meeting was conducted with the participation of CLP group and local people from the Unini River area to present the project and verify which villages were interested in participating of this project. From the nine villages in the Unini River, five were interested in participating (Tapiía, Manapana, Vila Numes, Terra Nova and Lago das Pombas).

Monitoring adult individuals

The monitoring of turtles occurred in eleven lakes around three communities in the months of October 2009 to October 2010.

Four trammel nets were used to collect the chelonians. The monitoring started at 6:00h and finished by 18:00h; the nets were checked every three hours to avoid turtles drowning while immobilized in the net.

The animals captured were marked (Cagle, 1939), weighted (in grams) and measured in the length of the carapace (CL in mm); width of the carapace (CW in mm); plastron length (PL in mm); width of the plastron (PW in mm).

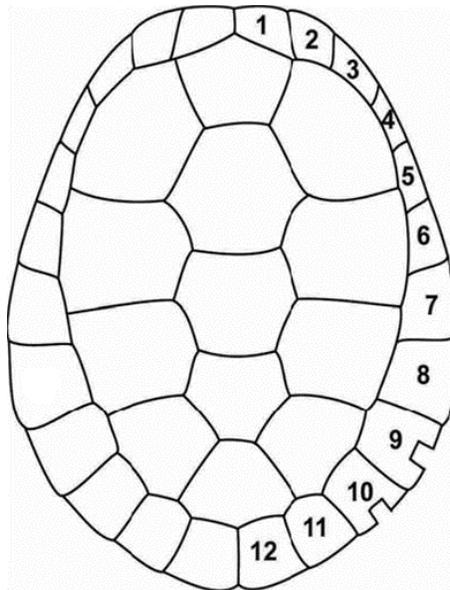


FIGURA 2. EXAMPLE OF CARAPACE MARKING USING CAGLE SYSTEM (CAGLE, 1939). IN THIS EXAMPLE THE TURTLE IS IDENTIFIED AS INDIVIDUAL 9R 10R.

Training beach patrols

The training occurred in October 2009 and was divided in two sections. The first consisted in teaching them information about ecology, biology, research methodology and examples of projects in the Amazon that have been successfully conducted by local population and researchers. In the second section a practical class explained the patrol monitors how to collect data and fill in field data sheets. In addition they were taught how to build the wooden boxes to protect hatchlings from predators while they were emerging from nests

Nest Biology

For each nest found, researchers and beach patrol monitors recorded the follow data:

- Species
- Date of laying eggs and hatching
- Number of eggs
- Length and width of eggs
- Depth and width of nest chamber

After the eggs hatched, the nestlings were weighed and measured (same measurements used for adults). Our objective to measure the nest temperature using data loggers was not possible due to the drought of 2009. Because of the drought, turtles nested earlier in that year than usually they do and we arrived late to set the data loggers in the nests (they are suppose to be set in the begging of the eggs incubation). As a consequence, we could not collect data about the sex ratio rate of the hatchlings produced in the Unini River, nor the average temperature of the sandy beaches.

Hunting and use of turtles

During the seven field trips, questionnaires with semi-structured questions were applied within the local population. Participative research (research with the participation of local people) was conducted.

Environmental education

The environmental education activities were developed in two sections: a didactic one in which the theme was *E brincando que se aprende* (It is playing that we learn) and a practical activity with the theme *Trabalho de pesquisador* (Researchers work).

The first section *E brincando que se aprende* was divided in two fases. The first focusing the presentation of the groups and the knowledge those children already have regarding the turtles. The CLP group collected this information by the use of games, drawing and wax modeling. The second part was a dynamic activity in which CLP group introduced information about the biology and ecology of chelonians by the use of outlines and games.

In the second section, “Trabalho de pesquisador”, field trips were conducted with children to provide them the possibility to know the job of a researcher who studies turtles.

2.3. OUTPUTS AND RESULTS

Turtles monitoring

A total of 408 individuals were collected. Details are given in Table 1 (Appendice 1).

For the red headed turtle (*Podocnemis erythrocephala*), the mean size of adult females carapace length was 244 mm and 210 mm for adult males. For the yellow headed turtle (*Podocnemis unifilis*), the mean size of adult females carapace length was 326 mm and 260 mm for adult males (Appendice 1, Table 2). Sex ratio of red headed turtles was balanced (0.51♂:0.49♀). The same was true for the yellow headed turtle (0.71♂:0.29♀).

The capture indice was 0.14 animals/hour/net. The trammel nets had a capture efficiency ranging from 0.009 to 0.26 animals/hour/net for the red headed turtle. The mean number of

red headed turtles per field trip was 52.5 individuals, the most abundant species collected. Red headed turtle was more abundant in the falling of water season (68.2%) (Appendice 1, Table 2). The average number of yellow headed turtle per field work was 8.2 individuals and 72.2% of the individuals were collected in the falling of the water/dry seasons (Appendice 1, Table 3).

Nesting beaches

The training of beach patrols to protect and manage the nests and hatchlings was done with four residents of the Vila Nunes village. None of residents of the other villages participated in the beaching patrol training due to lack of interest in the project and/or because of the distance of the village from the nesting beaches.

During the training, the residents were taught about techniques to manage and conserve nests and hatchlings. Together with the residents, the CLP team built wood boxes to protect hatchlings from predators when they were emerging from nests

The Praia do Vovô beach was the one chosen to be managed because of distance criteria matters. The CLP team and the beach patrol volunteers collected data from ten red headed turtle nests and ten yellow headed nests (Appendices 4, Picture 4). In the 2009 nesting season, 95 hatchlings hatched in the monitored nests from which 55.7% were red headed turtles and 44.3% were yellow headed turtles (Appendices 1, Table 5). The hatchlings were released by the residents on the Nambu Lake in February 2010.

Hunting and use of turtles

The questionnaires applied to 60 adults and 30 children showed that turtles are of a large importance for consumption and local subsistence. The most consumed species was the big headed turtle (*Peltocephalus dumerilianus*) that can be easily caught by the local residents throughout the year.

Besides being a delicious and nutritive food, the residents talk that it is easily stored alive for long time, without having to feed it or keep refrigerated.

Environmental education

The environmental education activities were done in five communities, involving a total of 80 children. Children of all ages participated of the activities. Adults also participated in most of the time helping the children.

The activities, divided in two parts, are illustrated in Appendix 6: *E brincando que se aprende* (It is playing that we learn) (Picture 6) and a practical activity with the theme *Trabalho de pesquisador* (Researchers work) (Picture 7). The activities are described in appendix 2. At the end of these activities, an educational book (Appendix 3) and a t-shirt (Appendix 4 and Picture 8) were given to all the participants.

During these activities it was possible to realize that the residents of the Rio Unini have a wide knowledge about turtles. However, there is a lack of knowledge about the importance of conservation of turtles and the importance of them for next generations.

2.4. ACHIEVEMENTS AND IMPACTS

The most collected species in the Rio Unini were: red headed turtle (84%), yellow headed turtle (12%) and the big headed turtle. Although the big headed turtle was the less collected species by the CLP team, it is the most consumed by local residents. This fact is explained by the method of collection used by the CLP team, the trammel nets. These nets are not efficient to collect the big headed turtle. If we used another methodology, we possibly would catch more big headed turtles, but the interest was the *Podocnemis* species since they are in more endangered status. The red headed turtle and the yellow headed turtle were caught in higher number in the falling of water and dry seasons when turtles are moving from the lakes to the rivers towards the nesting beaches (Appendix 1; Table 5).

The sex ratio for the turtles was calculated using only adults. The size limit between juveniles and adults was defined using data from another study also in the Rio Negro Basin (Benrhard,

2010). Red headed turtles females were considered adults from 221 mm carapace length and males from 161 mm carapace length. The sex ratio was only calculated for the red headed turtle and the yellow headed turtle because for the other species the number of individuals collected was not enough to calculate sex ratio. The sex ratio of red headed turtle was 0.51♂:0.49♀. For the yellow headed turtle the sex rate was 0.71♂:0.29♀.

The great receptivity by the residents of the Rio Unini demonstrated that the environmental education is a very efficient tool to be applied to work for conservation awareness by local people. During the activities it was possible to check the great knowledge that adults and children have regarding the biology, natural history and ecology of adults. It was clear that the residents of the Rio Unini villages do not need this information but better understanding about conservation and the importance to conserve turtles and other species to balance the environment and to exist for future generations.

SECTION 3

3.1. CONCLUSION

- By the use of trammel nets, the red headed turtle was the most collected species. However residents of the Rio Unini have different methodology for hunting and the most collected species by the local people is the big headed turtle;
- Turtles from the Resex Unini are threatened because of the high pressure they have been facing for subsistence hunting. The residents have good knowledge of the turtles in the Unini River regarding their Biology and Ecology;
- The habit of feeding on turtle is a strong cultural habit brought from many generations ago. Besides being a very nourishing food, it is easy to store alive for long time. Environmental education programs have to consider this cultural fact when talking about conservation;

- The residents think that turtles populations will last forever, telling that “what is made by God never ends!”. They do not understand the meaning of conservation;
- Our study confirms the need of support from governmental and private institutions and organizations to help to apply conservation of turtles in the Amazon. Conservation areas without environmental education actions will soon have a local extinction of turtles;
- The effort of scientific work together with environmental education should be kept constant. To conserve turtles in the Amazon it is necessary to change social and cultural habits, what demand many years of work. In addition, it has to be a very careful work to avoid their revolt of people for not being allowed to hunt without control. To conserve turtles, many years are necessary since they are long live animals and the results from conservation and management can only be seen after long time. Turtles have been under pressure for long time and this reality has to change before they become completely extint!

3.2. PROBLEMS ENCOUNTERED AND LESSONS LEARNED

Which project activities and outcomes went well and why?

All the activities in the Project went well as expected. The only activity we could not accomplish was the use of dataloggers in the monitoring of nesting beaches to check for the incubation temperature and the sex ratio of hatchlings. This part of the methodology was not accomplished because when the CLP arrived in the field to work, turtles were already nesting and there was no more time to install data loggers.

Please detail any problems that the project encountered or deviations from original project plans. Describe how these problems were addressed and what solutions were found to deal with these issues.

When we talked about the project at the first time to residents from ten villages, most of them did not show interest to participate of the project. Even though, we decided to keep the project in the same area with the hope that the residents would be conquered to

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participate in the project through seminars, meetings and environmental education activities. Through these steps the CLP could show the residents the importance of participation of all the villages. And fortunately these actions were successful and more communities accepted to participate of the project. At the end, from the ten communities, five integrated into the project and we hope to integrate somehow the other five in the future. We hope this is the beginning of our credibility as researchers with the local community. Conservation projects need to integrate the communities because hunting pressure affecting the survivorship of populations.

Another deviation from original project plan was the no use of dataloggers to measure the temperature of nests, already mentioned in the previous topic.

Briefly assess the specific project methodologies and conservation tools used.

In this project, the success was directly connected with the integration of scientific research and environmental education methodologies. The CLP team composed by graduation students (Masters and PhD) used to work only with scientific research and it was necessary to look for the help of specialists in the environmental education area. The use of scientific research was important to show numbers to the local people and the reality of turtles toward to extinction. At the same time the environmental education was important to introduce to them the meaning of conservation and importance for the environment and themselves. We confirm the need of integration of researchers and residents of the field work area to tackle the problem up side down and not only temporarily.

State important lessons which have been learnt through the course of the project and provide recommendations for future enhancement or modification to the project activities and outcomes.

Before starting the project, Camila Ferrara (coordinator) participated of the CLP training when she had the opportunity to realize the difference to work in projects focused in applied research and projects focusing in environmental education. This was perhaps the biggest lesson the CLP team could get from the training Camila participated. She had the opportunity to pass the information along and discussed the benefits and the need of environmental education as a new methodology to apply by the team in the Amazon.

Therefore, to apply the environmental education tools was the biggest challenge faced by the group because of the need for a good communication and psychology to deal with local people with successful results. In this sense, the group was greatly supported by the CLP group helping the new CLP team to develop strategies to work with conservation and environmental education.

When applying the environmental activities we confirmed the importance to work with children because they are better audience than adults. Also, children have not yet solidified their opinions and do not have their minds set on particular ideologies, so it is possible to introduce new concepts to them. The adults could understand the importance of turtles in the environment, but they can not believe that the amount they hunt can cause the decrease or the unbalance of turtle populations in the area. Only one percent of the population agreed that turtle population has been decreasing.

Larissa took a course about how to facilitate a workshop with stakeholders, funded by the CLP and University of Canberra. The course was given by *Durrel Conservation Trusts* and this opportunity gave us great ideas to make a workshop with local residents, researchers and local authorities. With this workshop we can hear the needs of different public and the needs of local people to improve the project in the future. We plan to do this workshop before traing the follow up CLP award, so we can start a second fase aware of weakness and needs.

From now, we have a good idea of how the residents of the Rio Unini live and their needs. We intend to look for economy alternatives for the local people to stop preassure of hunting turtles. Even though there is no turtle business in the Rio Unini, the local consumption is high.

3.3. IN THE FUTURE

Efforts for conservation of turtle species in the Rio Unini will not be finished by when the funds from the CLP are used up. During the execution of this project, contacts were made with other institutions which also believe in the importance of conservation of turtles. The efforts will be kept because only with persistence will the importance of turtle conservation

consciousness reaches our objective of conserving turtles for the future. The scientific research and environmental education should continue for years.

In the next years of the project in the RESEX do Rio Unini we hope to see an increase of natural populations of turtles, with a greater number of females nesting. Unfortunately, some local residents directly connected with professional fishermen do not accept the need of beach protection. However, children and teenagers from the local school as well as professors and some other adult residents think that helping the project is a way to contribute to nature.

Our key goal in the future is to look for alternative funds for the local residents to decrease the hunting pressure on the turtles. It is necessary to integrate the cultural habit of turtle consumption with the attempt of sustainable consumption of turtles.

SECTION 4

4.1. APPENDICES

On the 1st of December a seminar was given by the CLP team to the authorities of governmental institutions in the meeting pro the Conservation Units of lower Rio Negro. This project will be used as a model for next projects with turtles in the lower Rio Negro Area.

APPENDICES

Appendice 1 – Tables

TABLE 1. CAPTURES E RECAPTURES OF TURTLES FROM OCTOBER 2009 TO OCTOBER 2010 IN THE UNINI RIVER. AMAZONAS. BRAZIL.

Common Name	Scientific Name	N° individuals captured	Recaptures
Red headed turtle*	<i>Podocnemis erythrocephala</i>	355	13
Yellow headed turtle**	<i>Podocnemis unifilis</i>	53	0
Big headed turtle***	<i>Peltocephalus dumerilianus</i>	12	0
Twist-necked turtle	<i>Platemys platicephala</i>	1	0
Black-lined toadhead turtle	<i>Mesoclemmys raniceps</i>	1	0

* Picture 1; ** Picture 2; *** Picture 3.

TABLE 2. CARAPACE LENGTH COMPARISONS FOR THE THREE SPECIES OF TURTLE STUDIED IN THE UNINI RIVER.

Species	Male					Female			
	N total	N	$\bar{x} \pm S$	Max	Min	N	$\bar{x} \pm S$	Max	Min
<i>Podocnemis erythrocephala</i>	355	163	210±1.31	262	167	192	244±2.37	303	182
<i>Podocnemis unifilis</i>	53	36	260±5.39	284	200	17	266±5.61	392	190
<i>Peltocephalus dumerilianus</i>	12	8	412±1.31	430	390	4	-	-	-

TABLE 3. PERCENTAGE OF RED HEADED TURTLE CAPTURED IN EACH FIELD TRIP.

Field Work	Water Cycle	% of Captures per Field Work
1	Falling of water	26.3
2	Dry	16.6
3	Dry	12
4	Raising of water	14.4
5	Flood	1.1
6	Flood	5.4
7	Falling of water	24.2

TABLE 4. PERCENTAGE OF YELLOW HEADED TURTLE PER FIELD WORK.

Field Work	Hidrological Cicle	% of Capture per Field Work
1	Falling of water	33.3
2	Dry	1.85
3	Dry	7.4
4	Raising of water	24.2
5	Flood	0
6	Flood	5.55
7	Falling of water	27.7

TABLE 5. PERCENTAGE OF CAPTURE OF RED HEADED TURTLE PER HIDROLOGICAL CICLE.

Hydrological Season	Field Work	% of Capture per Season
Dry	2	25.4
	3	
Raising of water	4	15.1
Flood	5	6.8
	6	
Falling of water	1	52.7
	7	

TABLE 6. MEASURE OF NESTS, EGGS AND HATCHLINGS OF RED HEADED TURTLE AND YELLOW HEADED TURTLE IN THE UNINI RIVER. BREEDING SEASON OF 2009.

Species	Eggs (cm)			Nest width (cm)			Depth (cm)			Eggs length (cm)		
	$\bar{x} \pm S$	max	min	$\bar{x} \pm S$	max	min	$\bar{x} \pm S$	max	min	$\bar{x} \pm S$	max	min
<i>P. erythrocephala</i>	7.6±1.6	10	6	9.5±1.41	11	7	9.83±1.47	12.5	8	4.27±0.15	4.7	4
<i>P. Unifilis</i>	20.3±1.15	21	16	13±2.82	15	9.5	15±1.41	16	9	4.53±0.02	4.9	4.2

TABLE 7. AVERAGE LENGTH OF CARAPACE LENGTH (CL) FOR RED HEADED AND YELLOW HEADED TURTLE HATCHLING BORN IN THE BREEDING SEASON OF 2009.

Species	N total	CL (mm)	Min	Max	Weight (g)	Min	Max
Red headed turtle	53	45.2±0.016	41	48	8.2±0.22	5	10
Yellow headed turtle	42	47.6±0.17	51	145	10.2±0.01	9	12

Appendices 2 – Environmental education activities developed in the villages

1) "WHO IS WHO?"

This activity aims to get people to know one each other or if they already know, to make them get closer. We used this activity to make possible the approach of researchers and residents.

How it works: first the name of each person was written in a label. Then, people made a circle and each one had to choose one animal and write the animal name in a paper and in the label, telling why they chose that animal. After, they placed the paper in the center. At the end, each person took one paper and looked for the person who chose that animal. We could then talk about the connectivity of the animals and how nature works as a chain and not individually.

Material:

- label
- paper
- pen

2) "WHICH ANIMAL IS THIS?"

This activity aims to check the level of knowledge of residents about turtles.

How it works: a picture of a turtle was glued in a cardboard and hidden with another paper. Then, when children were sitting and waiting in the room we uncovered the image and asked them about that animal. We made questions such as: "where does this turtle live?", "What does this turtle eat?", etc. After, we asked them to make drawings about what was talked. Then, children were asked to explain about what they have drawn explaining it.

Material:

- paints

- turtle image
- paper
- chalk

3) “TALKING ABOUT NATURAL HISTORY”

This activity aims to teach children about turtles life.

How it works: Children were placed in circles and the CLP team talked about natural history of turtles. During this conversation we also integrated subjects regarding management and conservation of turtles.

Material:

- Turtle image

4) “PREDATOR-PREY”

This activity aims to show the relation between animals and how much important is an animal for nature, focusing on turtles.

How it works: children were set in circle and some of them used a blind fold to hide their eyes and were placed in the center of the circle. The hidden eyes children were placed in the middle and represented the predators. When the “predator” child touch someone and yeld an animal name (e.g. turtle), the touched child representing the “prey” has to yeld a prey name of the predator animal (e.g. fish).

Material

- Blind fold

5) “PUZZLE”

This activity aims to divide the children in groups and set important questions about turtles.

How it works: three puzzle was given for the children and each one had different color on the back. Each participant received a peace and they had to look for the children that have same puzzle color to set the puzzle.

Material

- Puzzles with turtle images with different back colors.

6) *“MEMORY GAME”*

The objective of this activity is to set the knowledge of turtle species.

How it works: the memory game has cards with turtle images and their respective common names. Children have to match the turtle image with its name.

Material

- cards with turtles image
- glue

7) *“BUILDING THE SHELL”*

This activity aims to show the biology of turtles by talking about the importance of the shell for turtles.

How it works: in this activity the children groups built a turtle shell.

Material

- Wax
- glue
- paper

8) *“WHOSE IS THIS HOUSE”?*

This activity aims to show children the habitats types used by turtles.

How it works: in this activity children match turtle species with their habitats. There were three cardboards with different habitats. Following, turtle images were given to the children and they had to place the turtles in the right cardboard related to the habitats.

Material

- Turtle images
- Cardboards

9) *“GESTURES – NATURAL PHENOMENON”*

This activity aims to show how different seasons influence in the life cycle of turtles.

How it works: the participants received a paper showing something related to the year season. From that, each participant has to make a gesture referring to this season and that could influence turtle life (rain, sun, flood, etc.). Children in this activity were divided in two big groups.

Material

- paper
- pen

10) *“IMAGE AND ACTION – TURTLE LIFE”*

This activity aims to set important knowledge regarding the biology of turtles and its importance to nature.

How it works: children were divided in two big groups. The CLP team gave each one a paper and a behaviour related to the turtle life (nest building, feeding, nesting, egg predation.). Each person had to act as the behaviour in the paper and the group that had the right guess first score 1 point.

Material

- paper
- pen

- wax

11) "TURTLES AND ALLIGATORS"

This activity aims how much knowledge children could acquire after the other games were done.

How it works: children were divided in two groups: one group represented turtles and the other represented alligators.

The CLP team say one phrase and if it was correct the children representing alligators had to catch the children representing the turtles. If the phrase was incorrect, the opposite occurs. The child that is catch has to go to the other group. So, wins the group which has more players.

12) "VERTICAL POEM AND COLECTIVE POEM"

This activity aims to analyse the knowledge obtained by the children and verify if there was change in children perception after the games.

How it works: by the use of a key word, children made up a poem using that word and talking about turtles.

Material

- Paper
- Pen

BRINCANDO E APRENDENDO
COM OS QUELÔNIOS DA
AMAZÔNIA



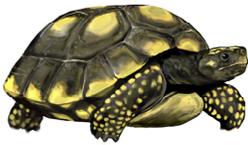
Rio Unini
2010

Quem é Quem???

Ligue o nome ao animal correspondente...



IAÇÁ



IRAPUCA



TARTARUGA
DA
AMAZÔNIA



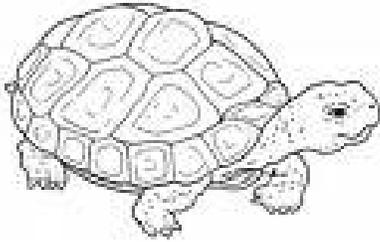
TRACAJÁ



MATÁ- MATÁ



JABUTI



Caça-palavras

Encontre o nome dos principais quelônios da
Amazônia... só uma dica!

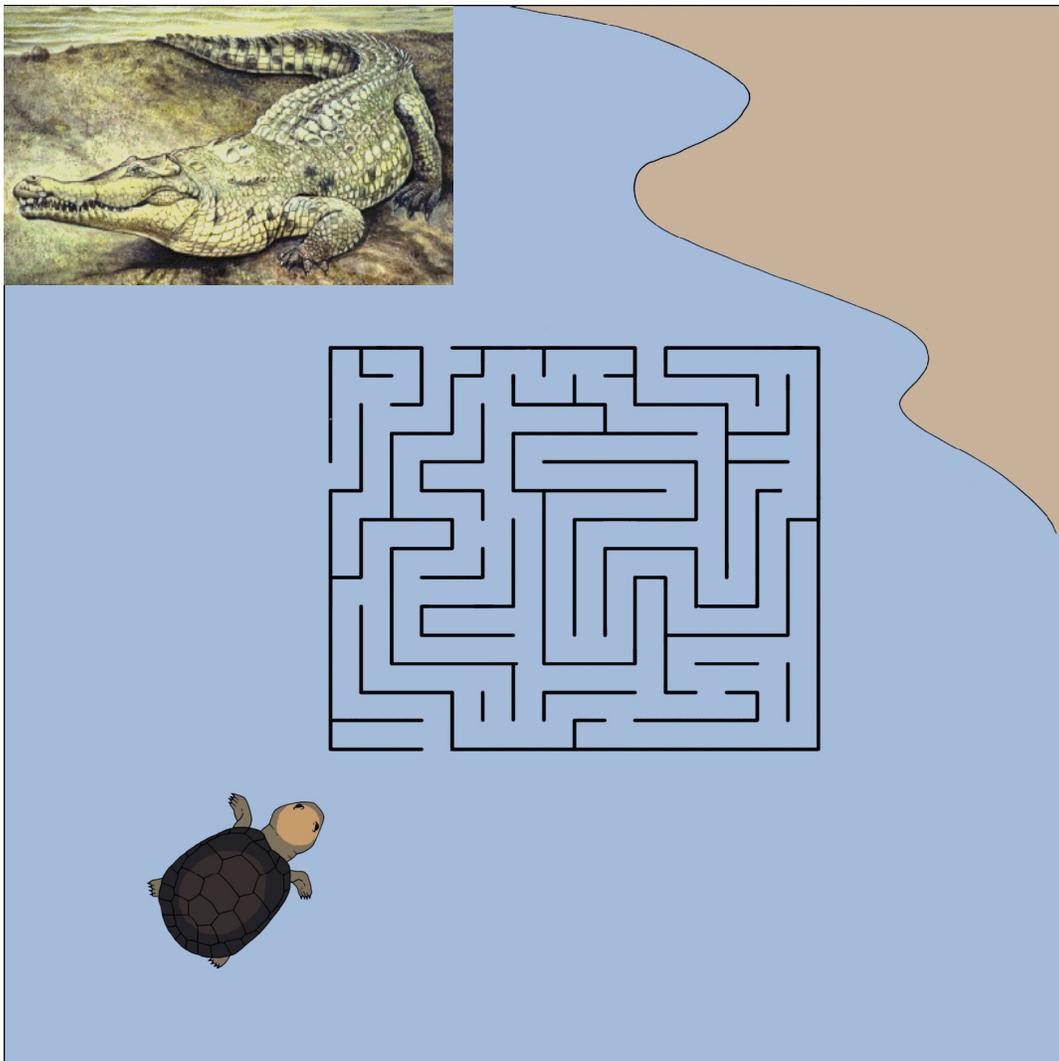
Tem seis nomes escondidos.....Boa sorte!!!

TGBNUHKLDCZAQRFVYUNMI
OLJMVBTREJSAWVCZIOIAR
OTARTARUGADAAMAZONIA
LGFTYFGHBNOBTBHJMOPAP
FGTRESAWGJNUMLPOTRMU
DSEHNBVCKMHNTNVCMAC
NLOYBGFCDRNOUINNJTTLA
TRBHGBFDBUOUMNHGBFABG
BVBHNGYBFVDERTJKLOPIU
AHJYTFRESAZXVVCJHGTUU
CLPMATAMATAHJIMLPOIPU
BHNMKJHGFDSERTBUIYTAP
SAZZDSMLOIUFRFDASBNRA
UINGHBUNVFRBTNHUMAIRU
MVFGHUMOIBGFDASXZCVIM
KLOPTBNGFDSNBKJUMARNJ
HGFDCSDBYNHUNMKLOIINH
GFDSAVCTRACAJALMRTUGN

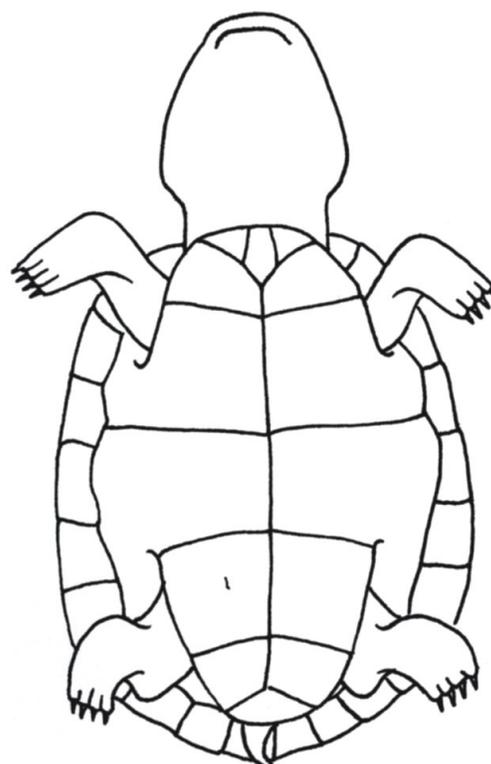
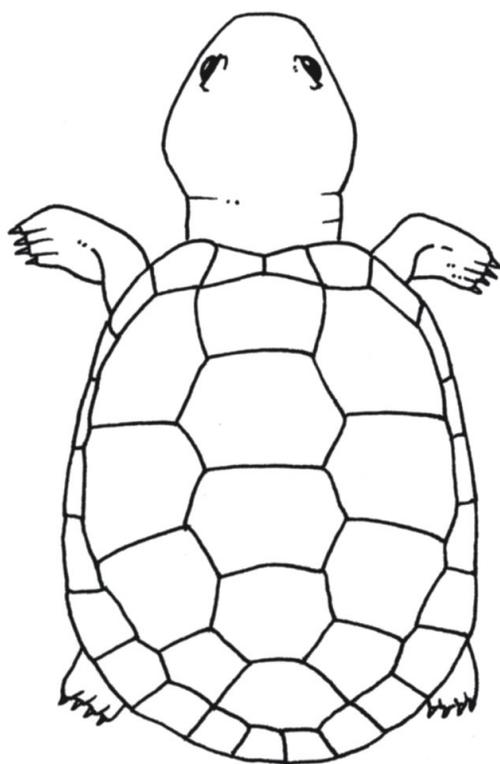
Ajude a tartaruga a encontrar a praia...

Mas cuidado se ela errar o caminho....

pode cair bem na boca de seu predador!!

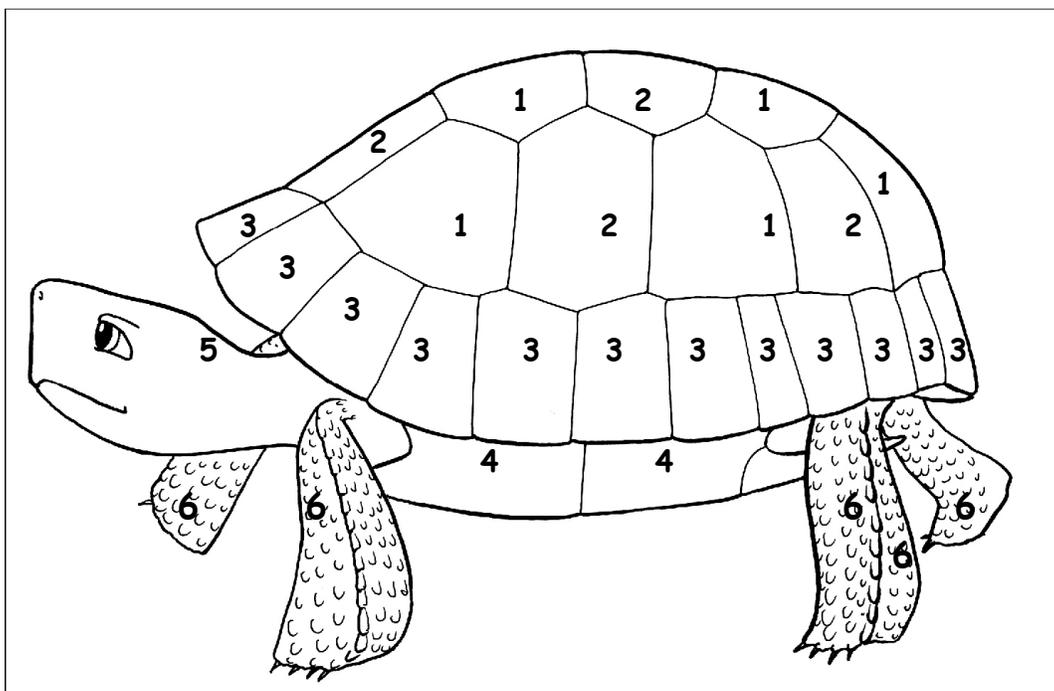


Ligue os pontos para formar a figura



Pintando com números

Pinte o jabuti de acordo com a legenda de cores...

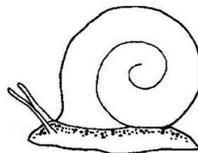


- 1- MARROM CLARO
- 2- VERMELHO
- 3- MARROM ESCURO
- 4- AMARELO
- 5- VERDE CLARO
- 6- VERDE ESCURO

O que a tartaruga come?



Agora que você já sabe o que a tartaruga come, faça um círculo em volta da comida que ela gosta.



Cruzadinha

Complete a cruzadinha e descubra o que você pode fazer para ajudar os quelônios da Amazônia...

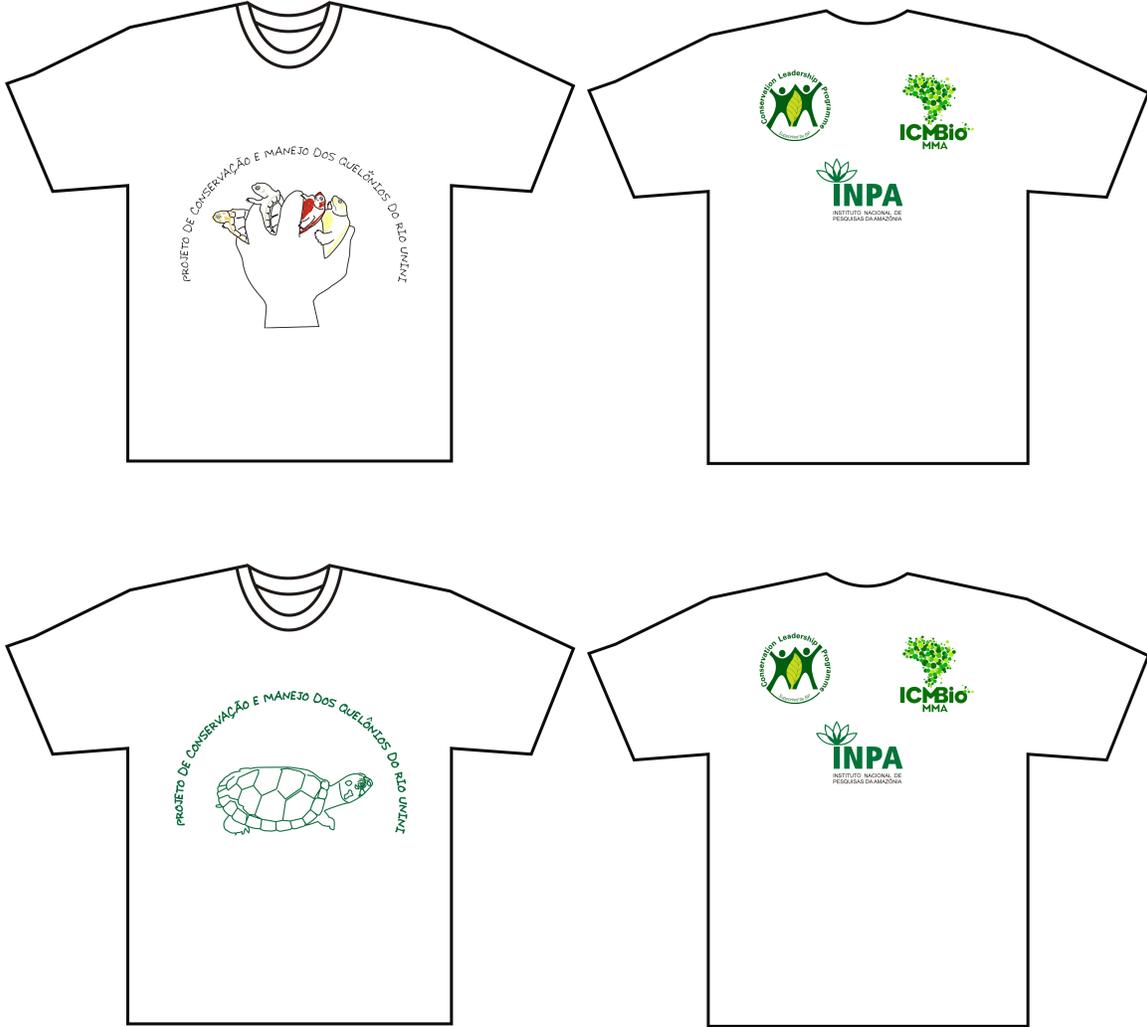
- 1- é um animal que come ovos de tartarugas;
- 2- é um dos principais predadores das tartarugas;
- 3- é um fruto muito apreciado pelos quelônios amazônicos;
- 4- local que grande parte do quelônios faz seus ninhos;
- 5- Habitat dos quelônios.

```

                P
            B U R I T I
                E   G
                L   S   A
    J A C A R E   R
                G   R   A
                A   V   P R A I A
                R   A   É
                T   R
                O

```

Appendice 4 – T-shirt



Appendice 5 – Publicity at the Faculty of Applied Science News. University of Canberra – Austrália.



Larissa.Schneider**Para...** [Larissa.Schneider Guilhon](#)**Cc...****Cco...****Assunto:** Applied Science Newsletter - Oct**Anexos:**

From: Janet.Palmer-Allen
Sent: Friday, 29 October 2010 10:22 AM
To: mutterings
Subject: Applied Science Newsletter - Oct

**Volume 8, Oct 2010**
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In this edition

A Good Week for Science at UC[A Good Week for Science at UC](#)[TLC Funding success](#) - Robyn Prior[Larissa's turtle conservation project](#)[James Robertson talks about Terrorism and Forensics](#)[Tamsin attends Bonn International Forensic Toxicology conference](#)[The Faculty welcomes two new staff members - Reena Ghildyal and Sudha Rao](#)[UC Staff Publish in Science](#)[Wildlife Genetics Short course](#)[Dryland Salinity team](#) - Leah Moore**Larissa's turtle conservation project**

This month **Larissa Schneider** (a PhD student of the Institute for Applied Ecology) and Camila Ferrara completed the conservation project they have started in the Brazilian Amazon two years ago. They received an award from the Conservation Leadership Program of US\$12,500 to develop a project to protect Amazon turtles and develop environmental education with the local community. These awards are highly competitive and winners are selected from amongst the best quality applications.

Recent Publications

Faculty Comings and Goings -
Paul Downey and Ken McQueen

Forthcoming Seminars



Turtles are among the most vulnerable animals in Amazonian cultures because they have been traditionally harvested as a source of protein. The project goal is to provide necessary skills and practical experience to attend the needs for the effective protection and management of the Amazonian turtles. The objective is to implement a conservation program consisting of practical work on nesting areas integrated into the training of park-rangers from the Brazilian Federal Environment Institute (IBAMA) and local people. Through intensive courses and practical lessons on nesting turtle management, these stakeholders will improve their knowledge on sustained yield harvest, education and outreach and management of nesting areas.

With this project Larissa and Camila could develop their knowledge, skills and experience of team members: Implement a focused, high-priority conservation project combining research and action and contribute to the education and awareness of local stakeholders.





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Closing 31 October 2010

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For 2011, all domestic applicants with a first class honours will be awarded a scholarship.

For further information contact kerrie.aust@canberra.edu.au (Applied Ecology), maryanne.simpson@canberra.edu.au (Molecular and Life Sciences) or

chris.lennard@canberra.edu.au (Forensic Studies).



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Appendice 6 – Pictures.



PICTURE 1. *PODOCNEMIS ERYTHROCEPHALA*, (A) MALE; (B) FEMALE; (C) HATCHLING.



PICTURE 2. *PODOCNEMIS UNIFILIS*, (A) MALE; (B) FEMALE; (C) HATCHLING.



PICTURE 3. (A) *PELTOCEPHALUS DUMERILIANUS*; (B) *MESOCLEMYS RANICEPS*; (C) *PLATEMYS PLATICEPHALA*.



PICTURE 4. HATCHLINGS EMERGING FROM THE NESTS IN PROTECTED BEACHES.



PICTURE 5. HUNT OF TURTLES IN THE RIO UNINI.



PICTURE 6. ENVIRONMENTAL EDUCATION.



PICTURE 7. 'RESEARCHER WORK', ONE OF THE ACTIVITIES DEVELOPED WITH CHILDREN.



PICTURE 8. PROJECT'S TSHIRT.

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Useful websites



The Conservation Leadership Programme

<http://www.conservationleadershipprogramme.org/>



Durrell Wildlife Conservation Trust

<http://www.durrell.org/>



The Turtle Survival Alliance (TSA)

<http://www.turtlesurvival.org/index.php>



The World Turtle database

http://emys.geo.orst.edu/main_pages/database.html



Instituto Nacional de Pesquisas da Amazônia

<http://www.inpa.gov.br/>



Instituto Chico Mendes de Conservação da Biodiversidade (ICMBio)

www.icmbio.gov.br/



Report distribution:

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- Conservation Leadership Programme. England.
- ICMBio. Manaus, Novo Airão, AM. Brazil.
- Centro de Conservação e Manejo de Répteis e Anfíbios. Goiânia, GO. Brazil.
- Instituto Nacional de Pesquisas da Amazônia – INPA, Manaus – AM. Brazil
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