CURSOS IBIMM

ESTUDO DA BIOLOGIA, ECOLOGIA E CONSERVAÇÃO DAS TARTARUGAS MARINHAS DA ÁREA DE PROTEÇÃO AMBIENTAL CANANÉIA-IGUAPE-PERUÍBE, MOSAICO DE UNIDADES DE CONSERVAÇÃO JURÉIA-ITATINS E ESTAÇÃO ECOLÓGICA TUPINIQUINS

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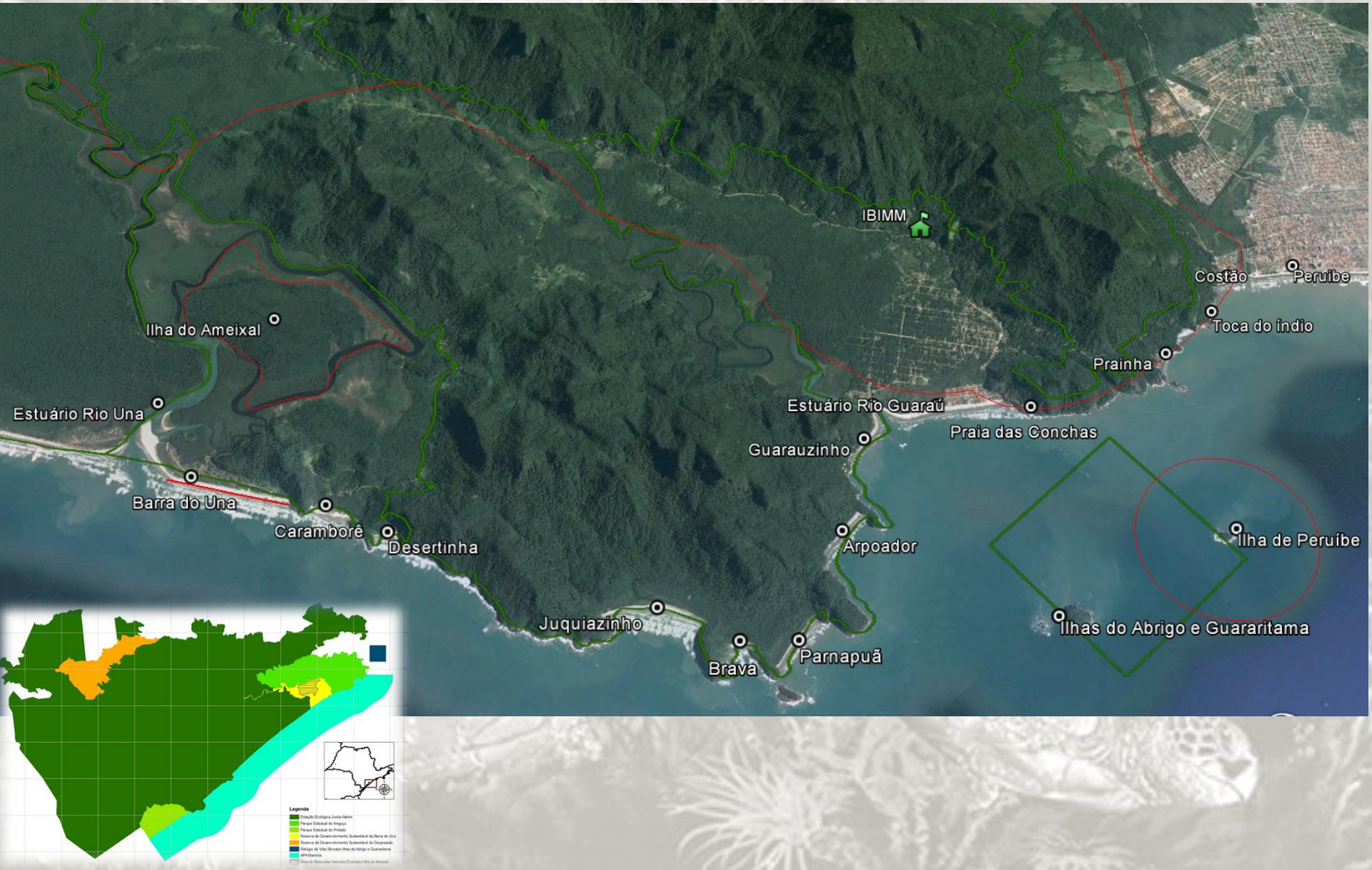
CNPJ-10.795.875/0001-80 CRBIO- 537/01 CTF. IBAMA - 4596788

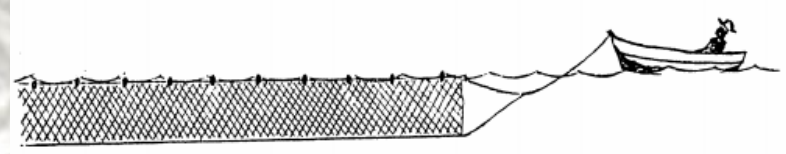
SALVAR OU NÃO SALVAR!!!

ÁREA DE ESTUDO

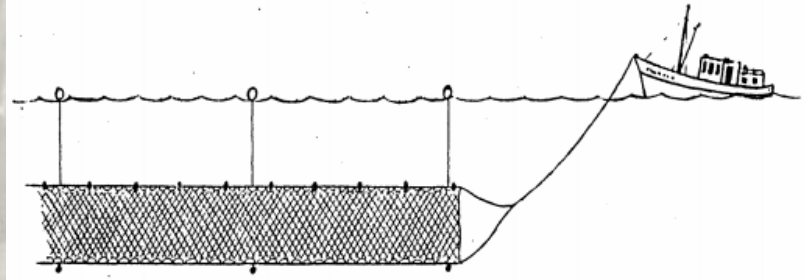
- Município de Peruíbe, Litoral Sul de São Paulo.



REDE DE ESPERA

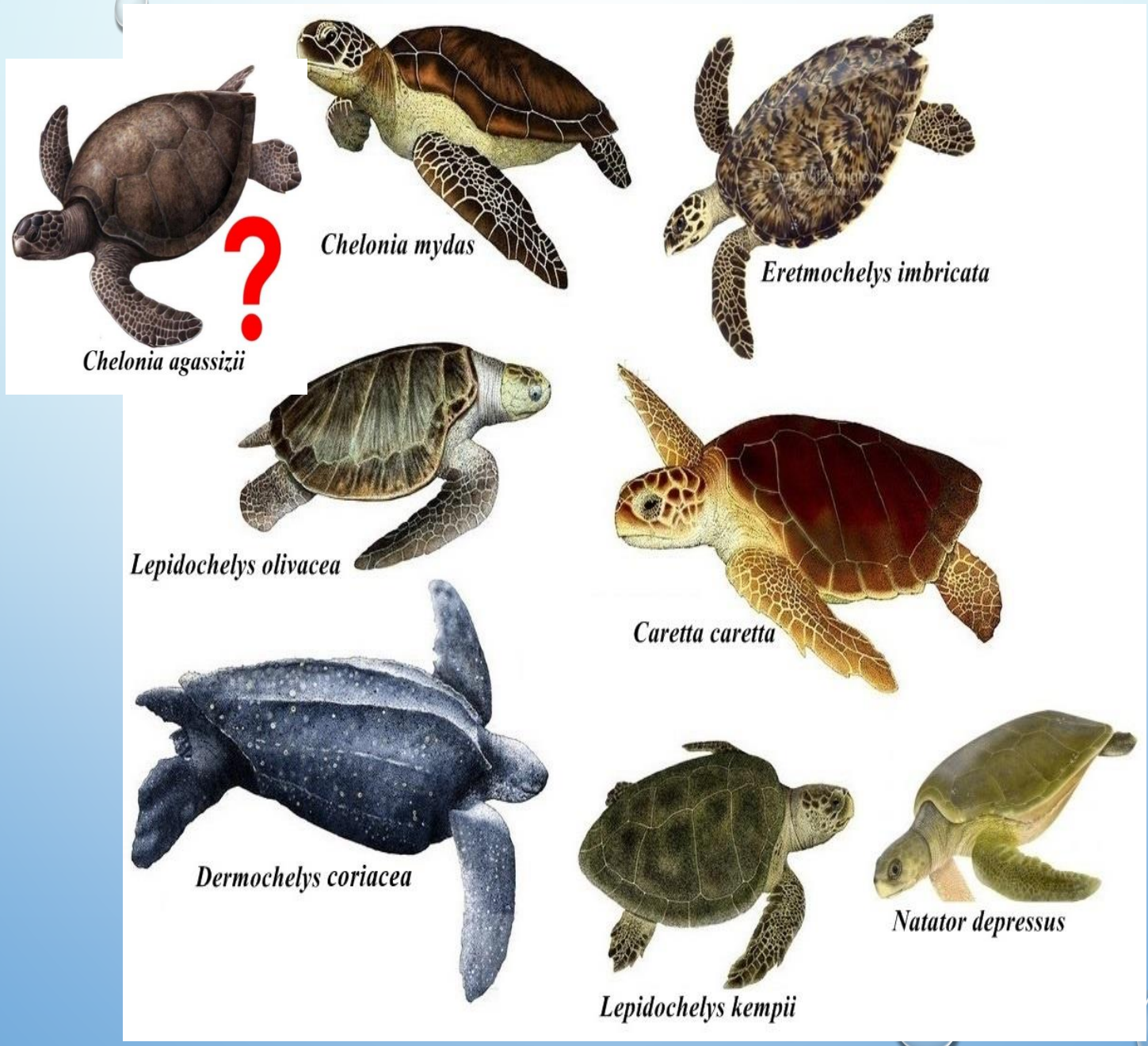


PESCA DE SUPERFÍCIE

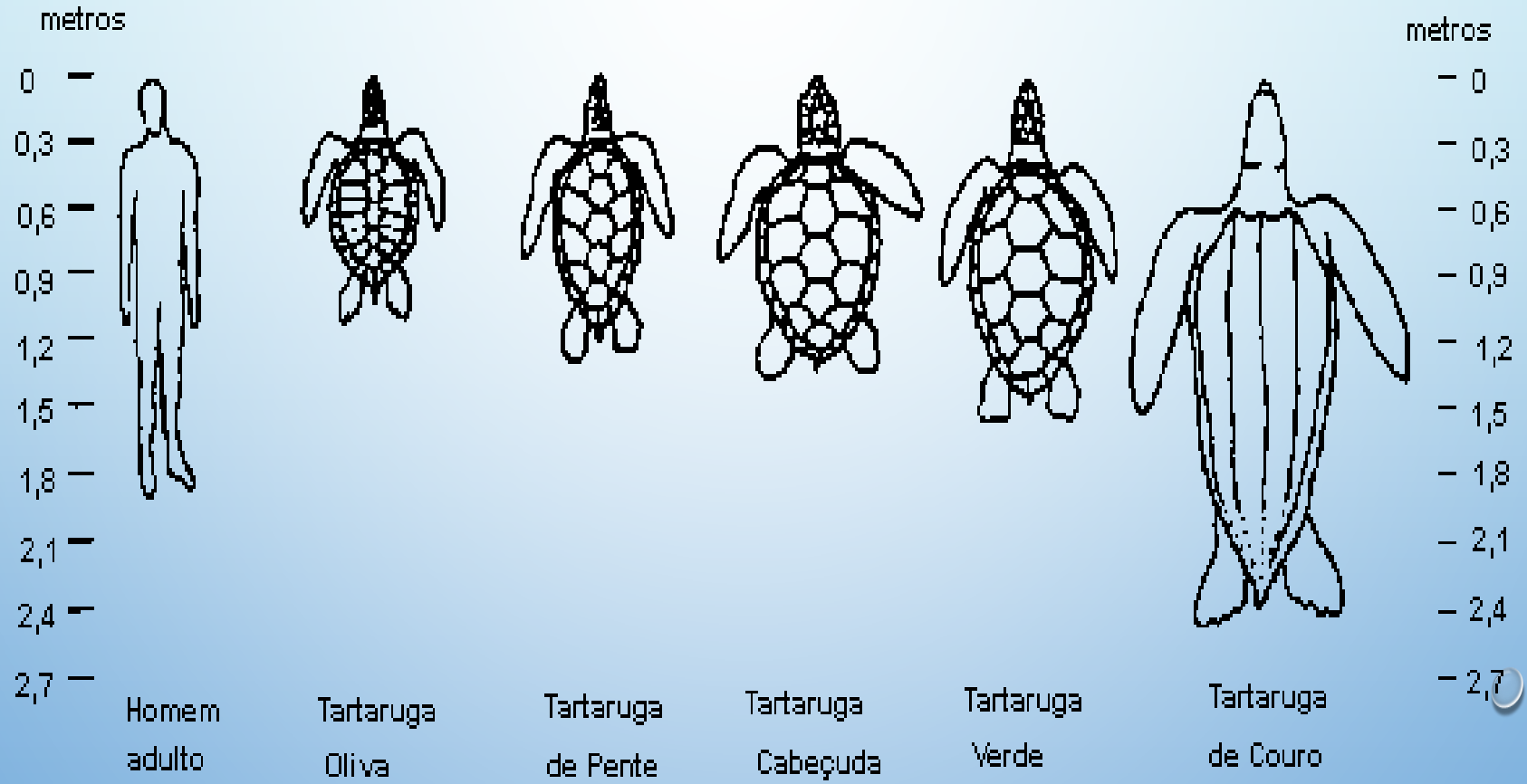


PESCA DE MEIA-ÁGUA

PESCA DE FUNDO


Chelonia agassizii
?
Chelonia mydas
Eretmochelys imbricata
Lepidochelys olivacea
Caretta caretta
Dermochelys coriacea
Lepidochelys kempii
Natator depressus

Tartarugas marinhas encontradas em águas brasileiras - Uma comparação de tamanho




Ciclo de Vida das Tartarugas Marinhas
Machos retornam para áreas de alimentação.
Área de reprodução.
Áreas de alimentação costeiras. Indivíduos imaturos/adultos.
Machos e fêmeas adultos migram para áreas de reprodução.
Migração durante o desenvolvimento. Ambiente pelágico.
Fêmeas adultas retornam para áreas de alimentação.
Temporada de desova. Fêmeas realizam de 3 a 7 posturas com intervalo de aproximadamente 14 dias.
Praia de desova.
Filhotes recém-nascidos nadam para mar aberto, onde permanecem nos primeiros anos de vida.
Ovos. 45 a 60 dias de incubação. Cada desova tem cerca de 120 ovos.
*Pelágico: ambiente de mar aberto, onde os seres vivos não dependem diretamente do fundo marinho.

Acasalamento


© Banco de Imagens Projeto Tamar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© Bivash Pandav


© Caribbean Conservation Corporation / www.cccturtle.org

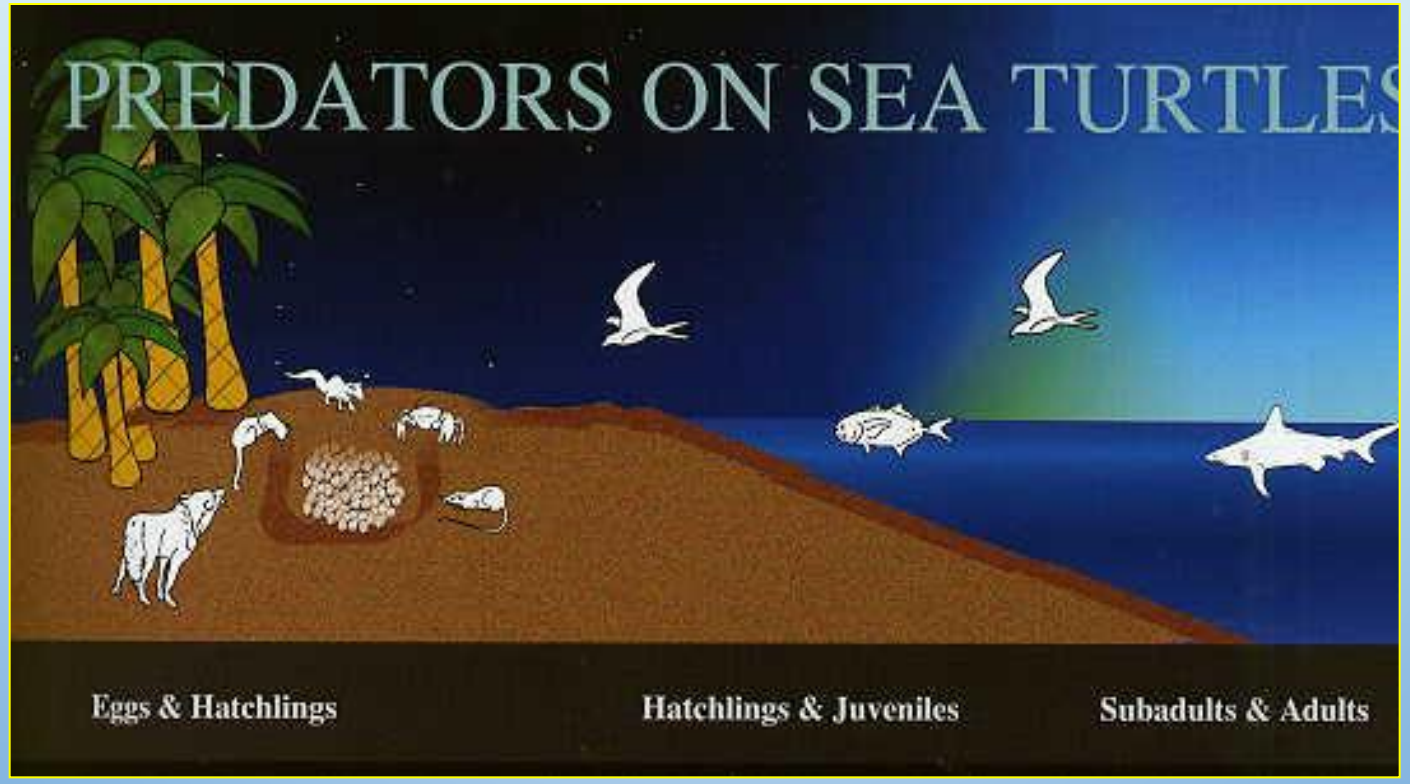

© SOS Tartarugas

Qual a importância da sua conservação?

Controlam a quantidade de vários animais e algas quando se alimentam...

Nascimento e predação

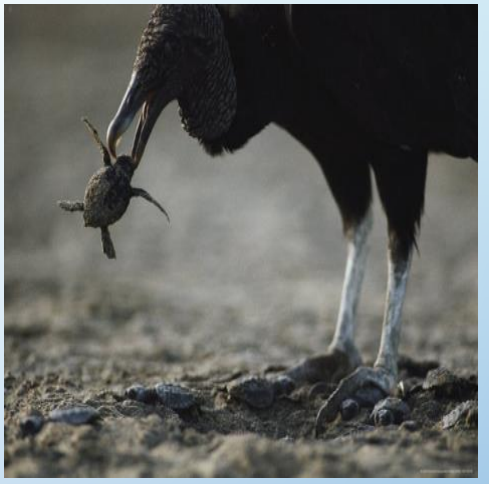
São alimentos de vários animais.
Grande importância na cadeia alimentar como predadores e presas.



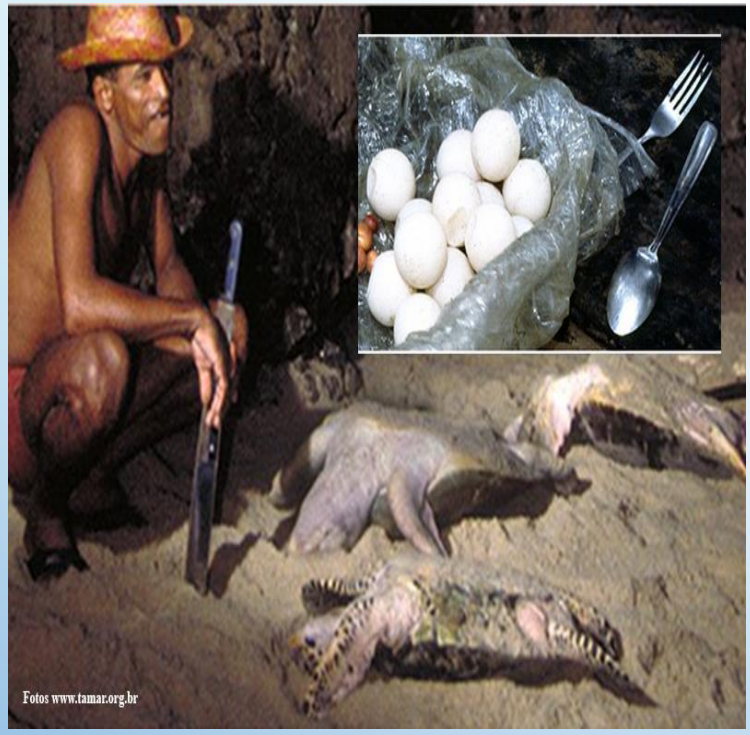
Ameaças Naturais

Presas na cadeia alimentar


Neusa Pereira

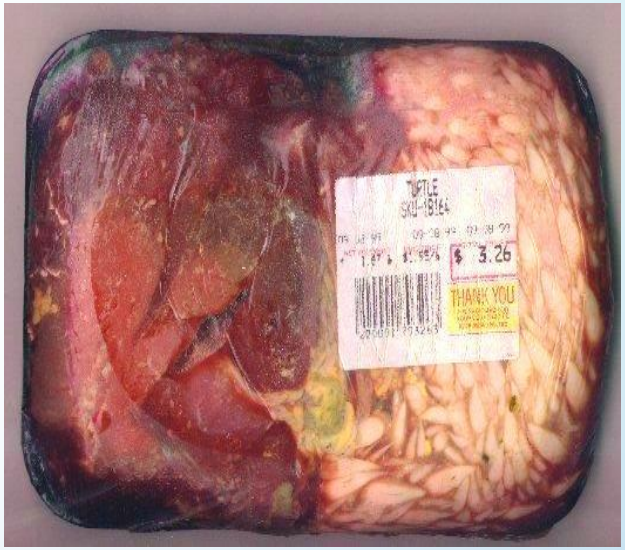


Ameaças causadas pelo Homem



Caça e Coleta de ovos

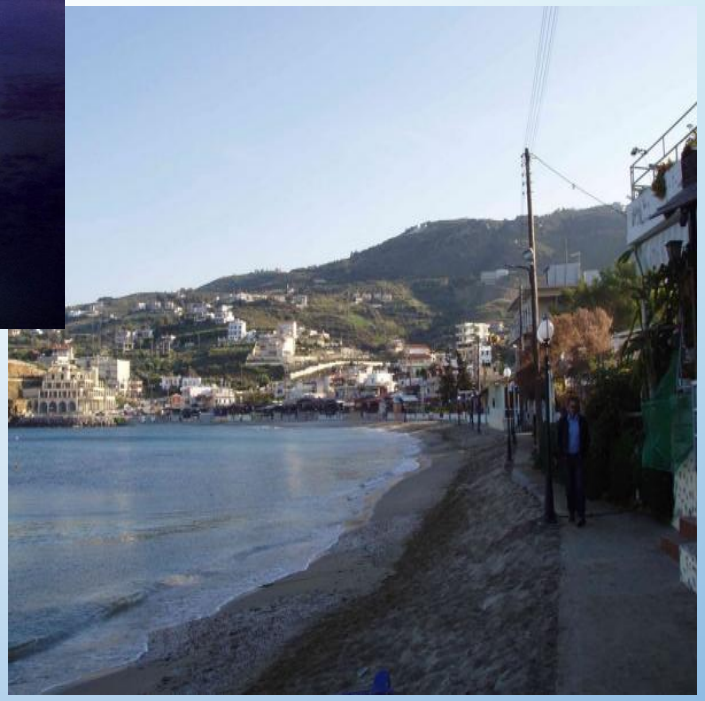

A
B
C
Hoy
TORTUGA
D
E
F
G
H

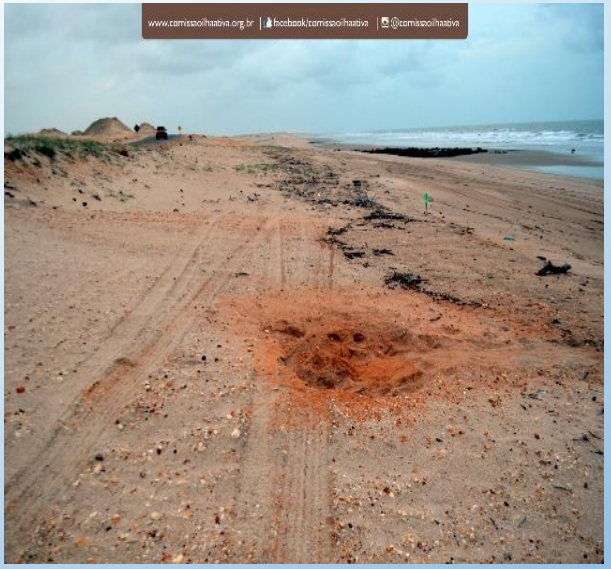

TURTLE
SKU-18164
$ 3.26
THANK YOU


A
B
C
D
E
F
G
H


A
B
C
D
E
F
G
H
Crema
Tortuga
Stellar
CREMA
TORTUGA
CREMA
HUMECTANTE
Soft
ACEITE
TORTUGA

Iluminação Artificial / Fotopoluição



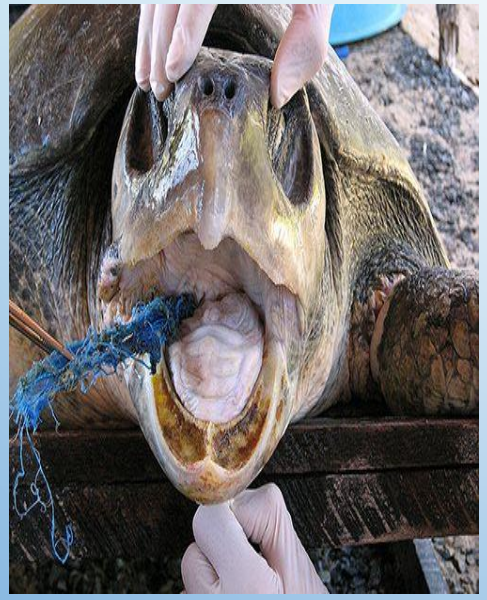


Trânsito de Veículos Terrestres e Aquáticos


MATÉRIA INORGÂNICA
CONTEÚDO ESTOMACAL DE TARTARUGA VERDE- Chelonia mydas
PLÁSTICOS

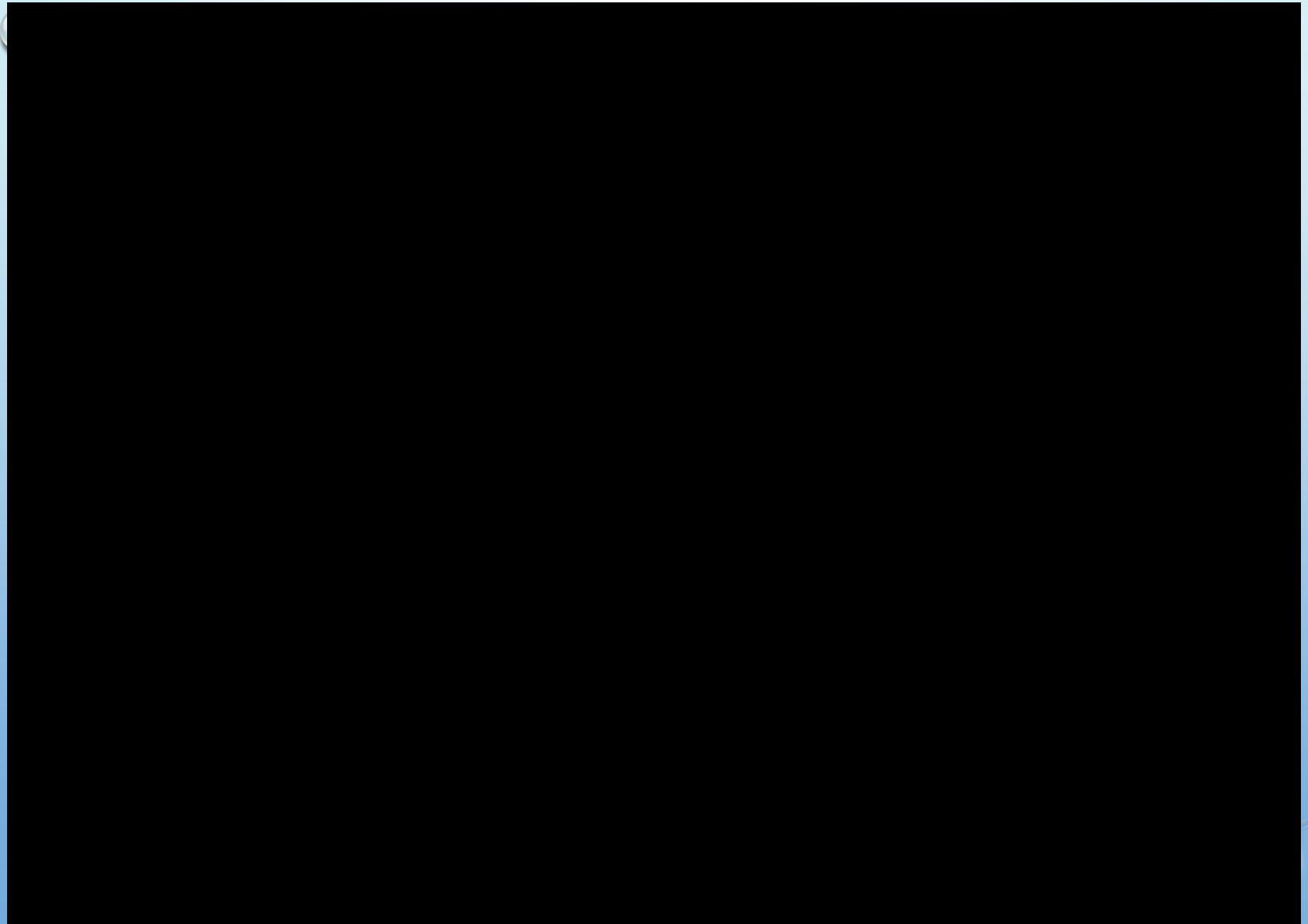

ing turtle
2000

Poluição



Captura Incidental na pesca

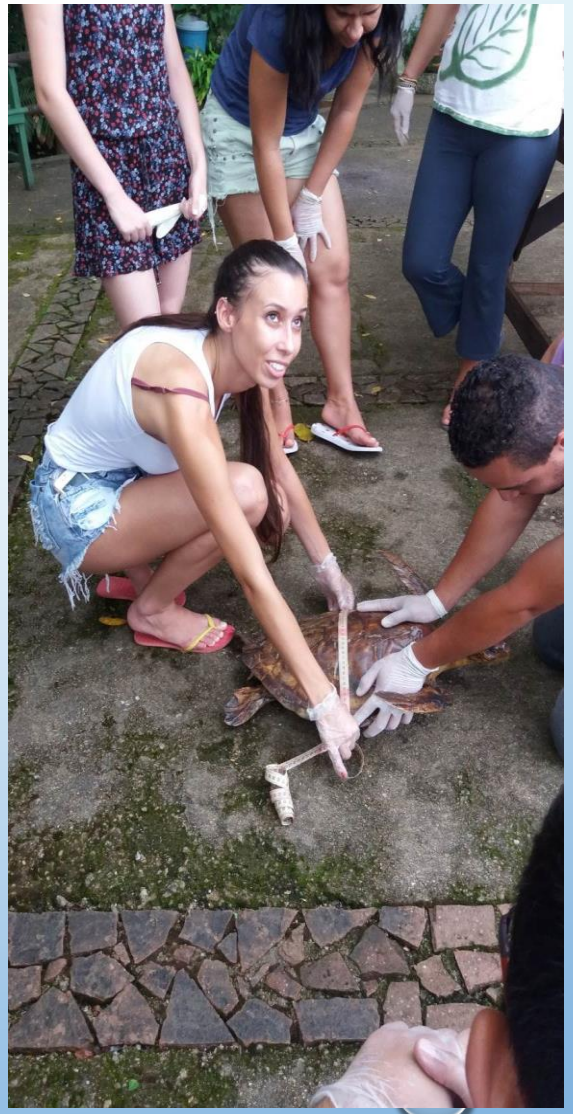
Pesquisas IBIMM



Qual a nossa Proposta?

Monitoramentos das áreas de encalhes

Biometria, registro fotográfico

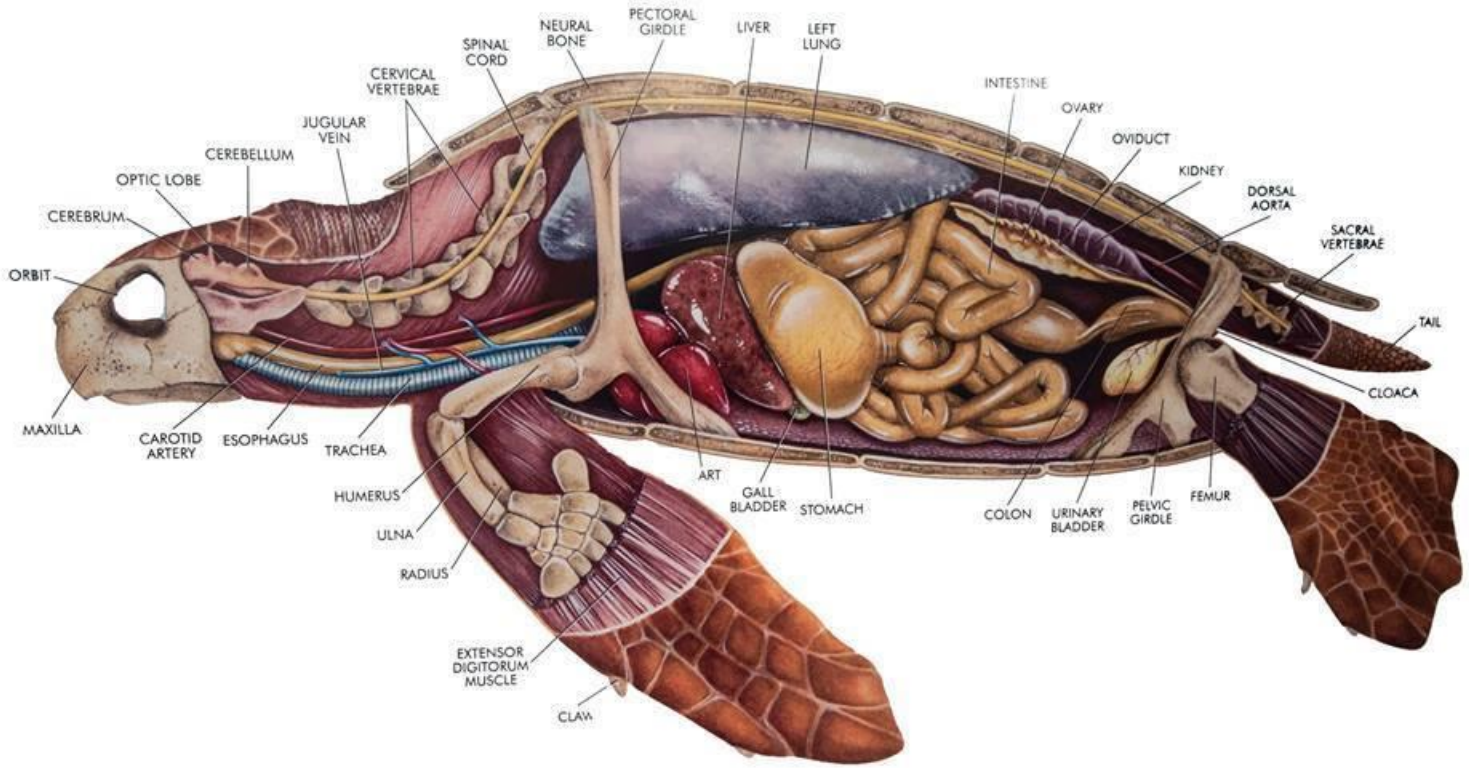


Verificar presença e parasitas internos e externos e possíveis causas de morte

Realizar a necropsia e posterior taxidermia dos animais mortos.

Conscientização da população local


192


NEURAL BONE
PECTORAL GIRDLE
LIVER
LEFT LUNG
SPINAL CORD
CERVICAL VERTEBRAE
INTESTINE
OVARY
JUGULAR VEIN
OVIDUCT
CEREBELLUM
KIDNEY
OPTIC LOBE
DORSAL AORTA
CEREBRUM
SACRAL VERTEBRAE
ORBIT
TAIL
CLOACA
MAXILLA
CAROTID ARTERY
ESOPHAGUS
TRACHEA
HUMERUS
ART
GALL BLADDER
STOMACH
COLON
URINARY BLADDER
PELVIC GIRDLE
FEMUR
ULNA
RADIUS
EXTENSOR DIGITORUM MUSCLE
CLAW

Morpho-quantitative evaluation of the Enteric Nervous System of the green turtle, *Chelonia mydas* (Linnaeus, 1758), Testudines, Cheloniidae

Lopes, E.Q.; Castelucci, P. - Faculdade de Medicina Veterinária e Zootecnia-USP
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INTRODUCTION

The green turtle (Chelonia mydas) in habits all the oceans. It is imagined that this species in its pelagic phase is omnivorous with an intense carnivorous tendency, becoming essentially herbivorous in its juvenile phase to adult herbivorous.

In chelonians, the gastrointestinal tract (GT) is anatomically diverse among the large variety of reptiles, and this fact requires more studies to understand their anatomical particularities.

Of the preliminary studies with sea turtles, 80% contained (solid waste) popularly known as garbage, in their stomach contents, being a determinant factor for death of these animals. Fig. 1

Several studies have been carried out to investigate the plasticity of the Enteric Nervous System (SNE), as well as changes in external agents, contaminated foods, dietary changes and diseases, however, studies that aim to study the SNE of sea turtles are non-existen .

The objective of this work is to perform the morpho-quantitative analysis of the enteric nervous system of the green turtle (*Chelonia mydas*) in the esophagus, stomach, small and large intestine and will be collected specimens from the region of Peruíbe-SP, in partnership with the Institute of Marine Biology and Environment (IBIMM). Immunofluorescence techniques, scanning electron microscopy and light microscopy will be used.

The work is justified because the studies are scarce in the area of the system of green turtle (Chelonia mydas) in the esophagus, stomach, small and large intestine, besides the study of the presence of the P2X7 receptor in the enteric neurons of these animals that has not yet been Explored.

OBJECTIVE

Perform the morpho-quantitative analysis of the enteric nervous *system and the distribution of the green turtle P2X7 receptor (Chelonia mydas) in the esophagus, stomach, small intestine and coarse.*

MATERIAL AND METHODS

The animals will be dissected in the Institute of Marine Biology and Environment - IBIMM, according to the methodology used by WYNEKEN (2001), allowing the analysis of external and internal morphological characteristics of the entire digestive system. Fig.2
Specimens of sea turtles of the species *Chelonia mydas* (green turtle) dead in stranding, in accordance with authorization and licenses approved by ICMBio / SISBio: 50132-1, of the SOS Turtles Marine Project developed at NUPEBI-IBIMM, in the city of Peruíbe, in MMA - ICMBio, CEUA-IBIMM-003/16 e Comitê Ética- FMVZ-Número: CEUA nº 3829270117 –Fig. 3-3ª

Macroscopic analysis.
(Tissues samples of dead animals will be collected and subjected to photographic records, biometrics and fixed in 4% formalin. Samples of about 2 cm of the esophagus, stomach, ileum, jejunum and the distal cervix of 05 animals per group will be washed in PBS, opened by the mesenteric border, and placed under wooden rafts with mucus facing upwards, fastened with the aid of pins Without stretching them.) Fig.4

Histology
Segments were collected from the esophagus, pylorus, stomach, ileum, duodenum, jejunum, proximal colon, distal colon, for histological analysis. The tissues were washed in PBS, opened by the mesenteric border, placed in wooden rafts and fixed in 4% paraformaldehyde for 52 hours. The tissues will undergo a series of increasing concentrations of alcohols, and afterwards will be diaphanized in xylol series and embedded in paraffin. After the tissues will be cut transversely in a microtome with a thickness of 5µm and stained by the Hematoxylin-Eosin (HE), Schiff Periodic Acid (PAS) method to evidence calciform cells and by the Masson and Picrosirius trichrome method for analysis of collagen fibers.

Immunoshistochemistry
The segments destined to immunohistochemistry will be opened by its mesenteric border and later placed in a wooden raft (1cm long by 2cm wide) with mucosa down and stretched by pins. They will be immersed in the fixative with 4% paraformaldehyde in 0.1M sodium phosphate buffer pH 7.0 at 4 ° C for one night. They will be removed the next day from the fixative and cleared with 03 washings of 10 minutes in PBS or demethylsulfoxide. Thereafter, the tissues will be storedin PBS containing sodium azide (0.1%) at 4 ° C for storage.The tissue will be fixed and bleached with the help of the stereomicroscope ZM800 (Nikon), the ileum of each group (CT, Sham) will be dissected. The tissue will be placed on a Petri dish, sectioned, and a portion of about 1cm2 obtained. Then, with the aid of fine-tipped tweezers, it will be detached from the rest of the tissue, the mucosa and the submucosal plexus thereby obtaining a membrane containing the longitudinal and circular muscle layers and between them the myionic plexus. It will be delicately removed from fibers of the circular musculature to obtain the membrane containing the myenteric plexus and the longitudinal musculature.

Methods of double labeling of the P2X7 receptor with NOS, ChAT, Calb and Anti-HuC / D.
Membrane preparations of the myenteric plexus of all groups will be immersed in a solution containing 10% normal horse serum solution, 1.5% Triton-X (Sigma) in PBS for 45 minutes at room temperature. Afterwards, they will be incubated in primary antibodies which will be described after standing for 48 hours at 4 ° C and washed in PBS for three times of 10 minutes each.
Double markers will be obtained using P2X2 purinergic receptor combinations with primary NOS, ChAT, Calb, and panneuronal (anti-HuC / D) antibodies with P2X7, NOS and ChAT.
The choice of these markers is based on Furness (2000, 2006) to demonstrate the chemical code of the major classes of enteric neurons: NOS, a marker for inhibitory neurons, ChAT for excitatory neurons, Calb for IPAN and pan-neuronal anti - HuC / D.
The primary antibody will be incubated, the tissue washed 3 times for 10 minutes each in PBS and incubated with secondary antibodies for one hour at room temperature. Afterwards, the tissues will be washed again in PBS for 03 times of 10 minutes each, and mounted on glycerol buffered with 0.5M calcium carbonate buffer (pH 8.6).
Scanning electron microscopy
The samples will be fixed in Karnosvsky, postfixed in 1% osmium tetroxide, dehydrated in ascending series of alcohols in concentrations of 50%, 70%, 90% and 100%, dried in a critical point device Balzers CPD 020 (FMVZ -USP) bonded with carbon glue on metallic (stub) and metallic (sputtering) bases with gold in the metallizing device EMITECH K550 (FMVZ-USP), and analyzed and photographed in a scanning electron microscope LEO 435VP (FMVZ –USP.

Evaluation extern

Figure 1– Solid wastes found TG

Figure 2 -Internal evaluation of a Chelonia mydas, according to the methodology used by Wyneken (2001), for the extraction of the digestive system.

Fig.3- Fig. 3A – Specimen Sea Turtle dead and anatomy

Collecting and fixing

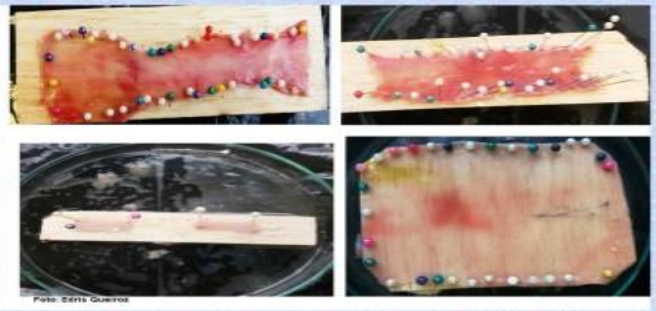


Foto: Edris Queiroz

Fig. 4- Analysis macroscopic

Dissection

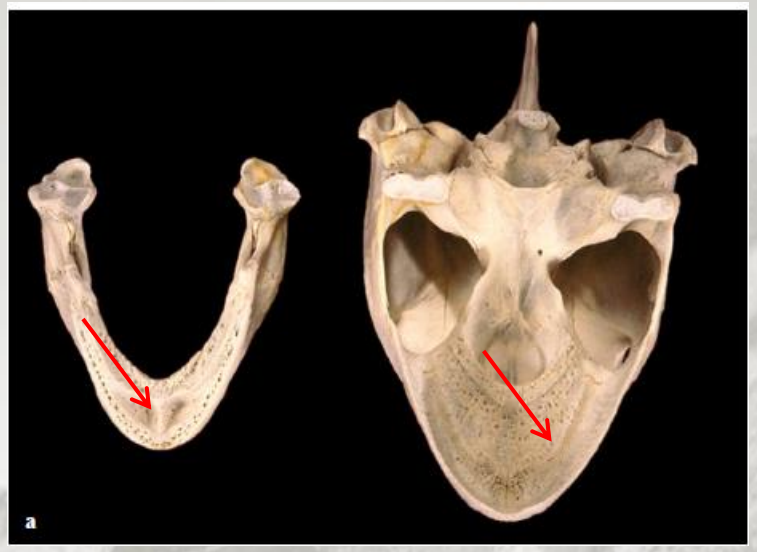
Double marking
NOS/GFAP
ChAT/GFAP
P2X7/NOS
P2X7/CHAT
P2X7/GFAP
P2X7/HuC/D

Neuronal Density (cm2)
Double marking (%)
Profile area (µm)

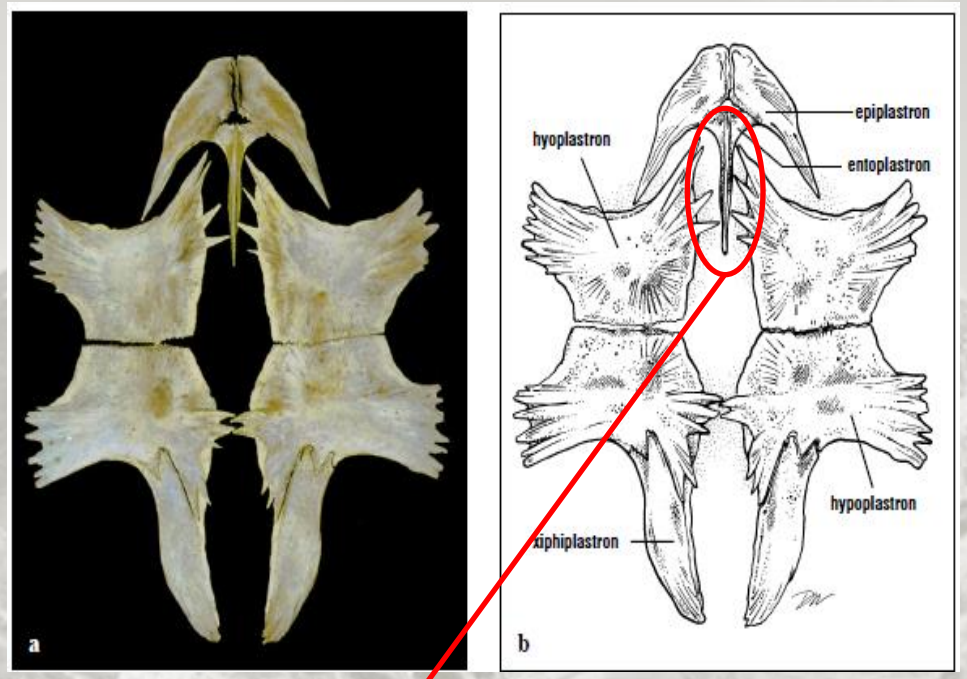
CARACTÉRES PARA IDENTIFICAÇÃO DA ESPÉCIE

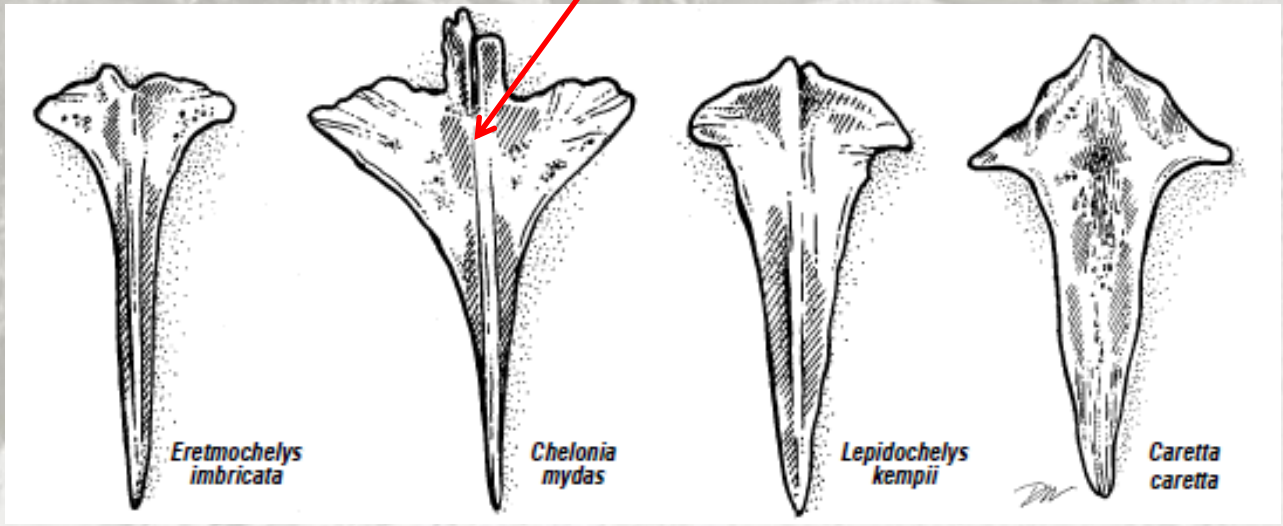
Skulls of all the species found in US waters. Clockwise from top right: Dermochelys coriacea (a), Eretmochelys imbricata (b), Chelonia mydas (c), Lepidochelys olivacea (d), Lepidochelys kempii (e), Caretta caretta (f). The hawksbill, green turtle and Kemp's ridley skulls are from immature animals, others are from adults.

CARACTÉRES PARA IDENTIFICAÇÃO DA ESPÉCIE

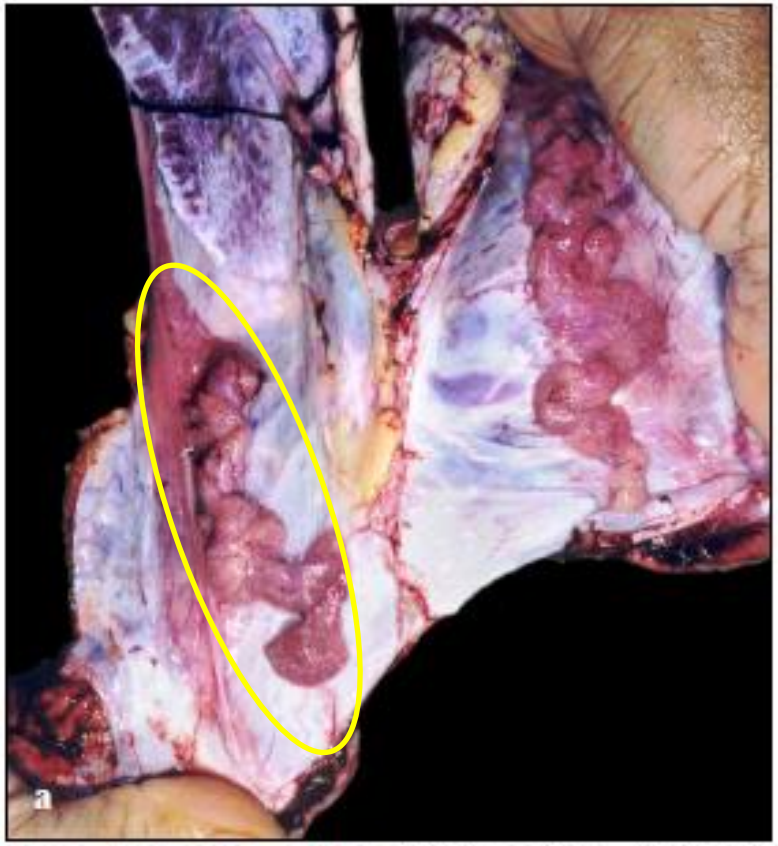


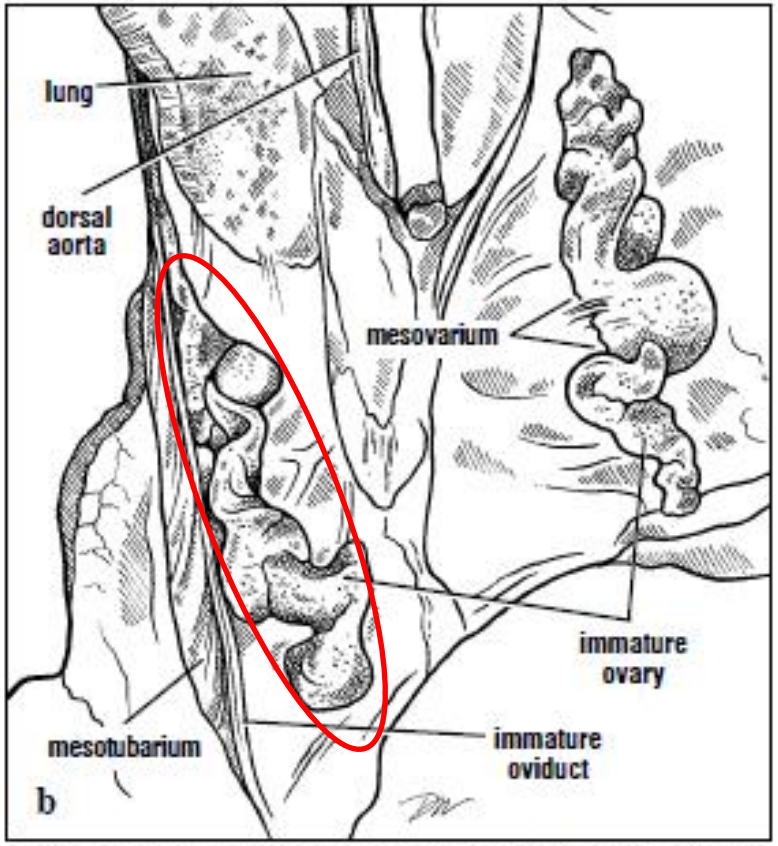
CARACTÉRES PARA IDENTIFICAÇÃO DA ESPÉCIE





DIMORFISMO SEXUAL





Figs. 223a and 223b. *Ovaries of an immature green turtle. The ovaries are attached to the peritoneal wall by their lateral edges. The surface of the ovary is granular. Lateral to the ovary is the immature oviduct, which is suspended by the mesotubarium.*

DIMORFISMO SEXUAL

RIA ou ELISA para testosterona ou laparoscopia

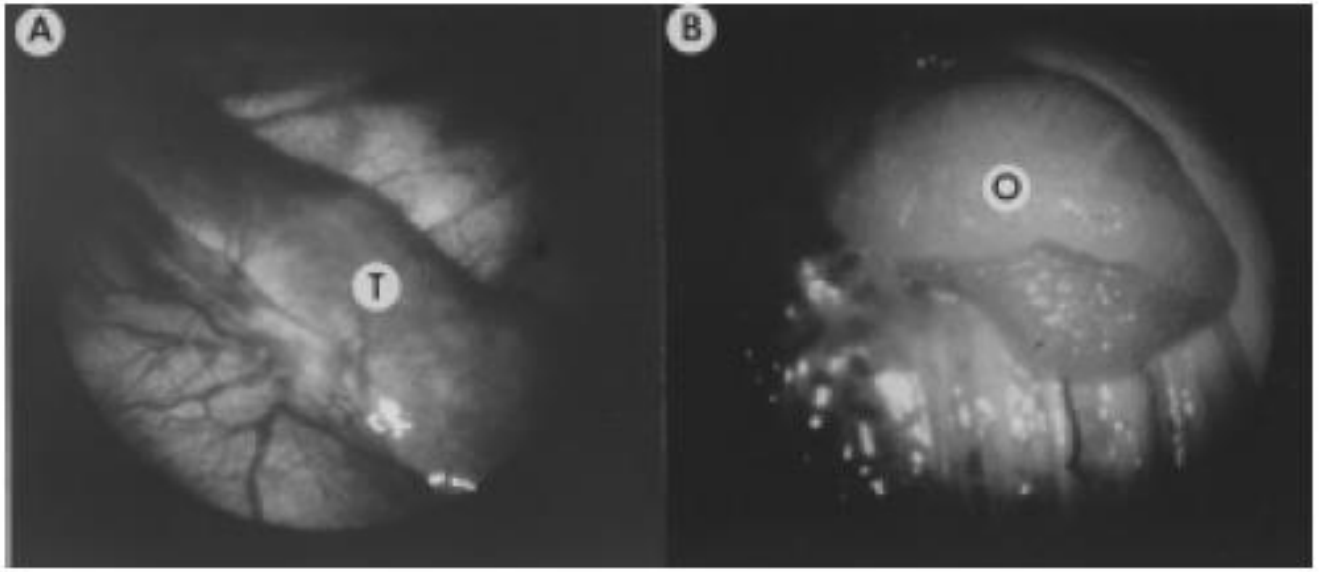
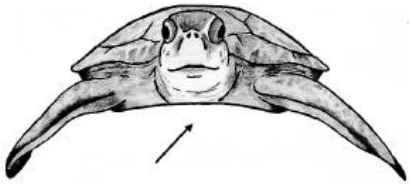


Figure 2. Appearance of immature testis and ovary through a laparoscope. 2A) Immature testis (T) is shown running diagonally through photograph. 2B) Immature ovary (O) is shown.

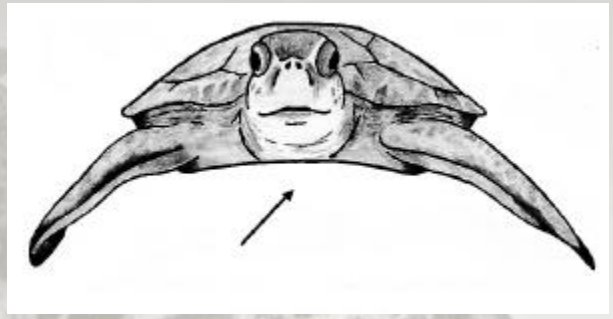
AVALIAÇÃO EXTERNA – Estado Nutricional

- **Emaciated:**
  - Sunken eyes
  - Loss of shoulder and neck musculature and fat
  - Loss of inguinal fat
  - Muscle tone watery/loose
  - Skeletal elements prominent on skull and plastron
  - Frequently loss of soft tissue between bones of carapace and plastron is evident



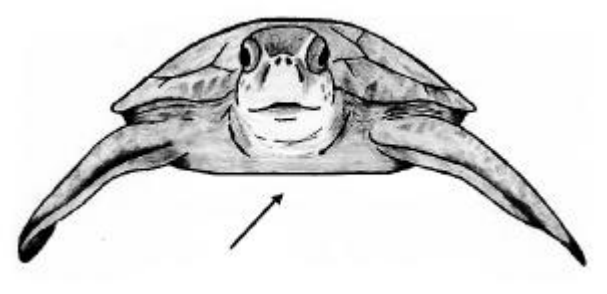
AVALIAÇÃO EXTERNA – Estado Nutricional

- **Thin:**
  - Loss of fat stores in shoulder, neck, and groin
  - Plastron slightly sunken in (concave)



AVALIAÇÃO EXTERNA – Estado Nutricional

- **Adequate:**
  - Normal muscle tone
  - Fat stores present
  - Plastron flat



AVALIAÇÃO EXTERNA – Estado Nutricional

- **Robust:**
  - Fat stores present and notable in neck, shoulder, and groin
  - Plastron may appear bowed (convex)

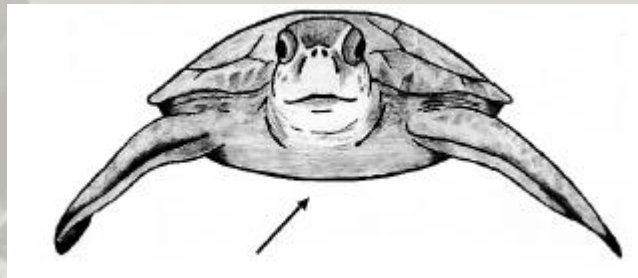


Figure 6. A robust sea turtle with a body condition score of approximately 4 out of 5. Photo credit: Dr. Terry Norton. *Click image to enlarge.*

AVALIAÇÃO EXTERNA – Estado Nutricional

- BCI= ([weight(kg)/SCL(cm^3)] X 10,000

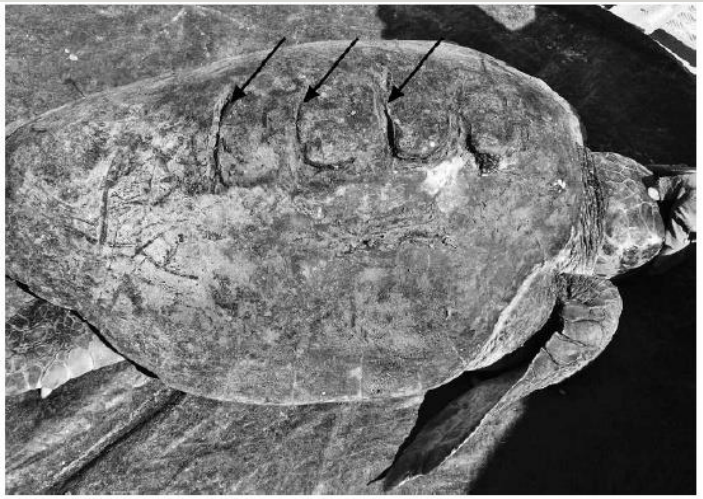
Objective body condition scoring

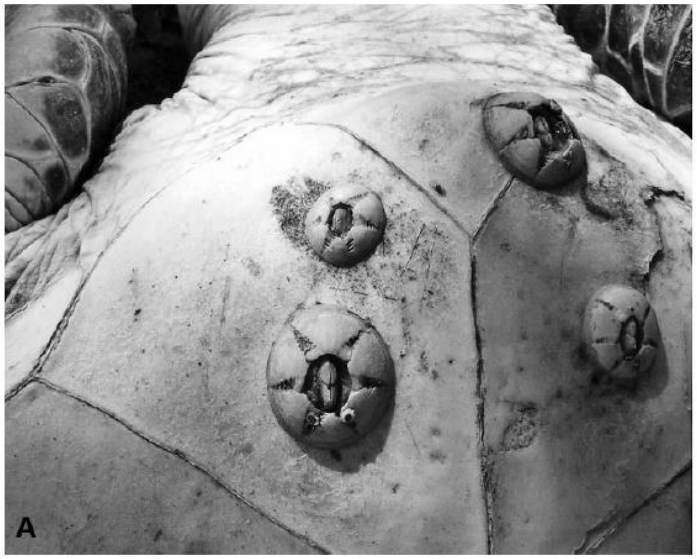
An objective assessment of body condition uses a standard formula. To calculate a body condition index (BCI) requires two measurements where BCI = [weight (kg)/straight carapace length (cm^3)] X 10,000 (Table 2).

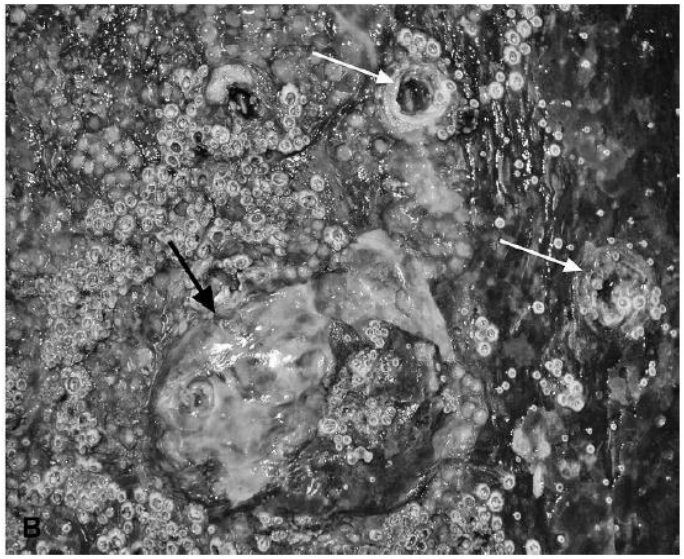
Table 2. Relationship between body condition index (BCI) and interpretation of body condition scoring in the sea turtle

Condition Index Code	BCI	Subjective Visual Interpretation
0	>1.20	Very Good
1	1.11-1.20	Robust
2	1.00-1.10	Normal
3	<1.00	Emaciated

AVALIAÇÃO EXTERNA







AVALIAÇÃO EXTERNA

Figure 12. Longitudinal carapacial fracture in a loggerhead sea turtle (*Caretta caretta*). Photo credit: Dr. Terry Norton. *Click image to enlarge.*

Figure 13. Ulcerative shell disease in a green sea turtle (*Chelonia mydas*). Photo credit: Dr. Terry Norton. *Click image to enlarge.*

Figure 14. Marginal scute osteomyelitis in a Kemp's ridley sea turtle (*Lepidochelys kempi*). Photo credit: Dr. Terry Norton. *Click image to enlarge.*

Figure 15. Shark bite injury involving the plastron and peripherals in a loggerhead sea turtle (*Caretta caretta*). Note the multiple curved lacerations of the axilla cranial to the large defect spanning the inframarginal scutes and some peripheral bones. Photo credit: Dr. Terry Norton. *Click image to enlarge.*

EPIBIONTES

Figure 2. Two specimens of *Ozobranchus margoi* that were found attached to the loggerhead turtle. Bar 1 cm.

Figure 17. The presence of algae on the shell indicates excess exposure to sunlight and is often observed in sea turtles with flotation abnormalities. Photo credit: Dr. Terry Norton. *Click image to enlarge.*

Figure 13. *Ozobranchus branchiatus* annelid, ectoparasite found in the skin of Olive Ridley turtles (*Lepidochelys olivacea*) in Mexico (picture taken from Gámez *et al.* 2006. P. 434).

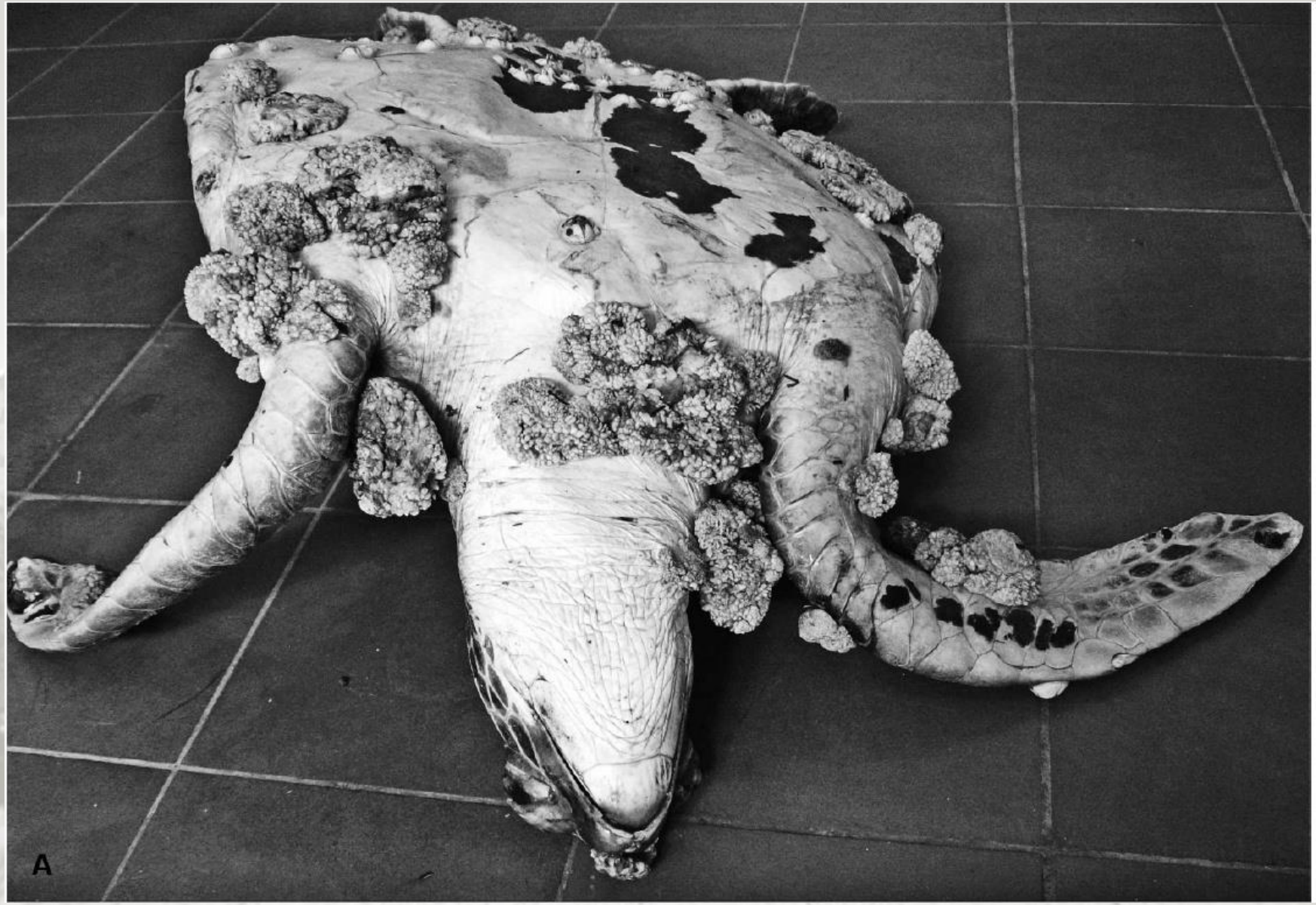
EPIBIONTES

Figure 9. Common parasites and epibionts. (a) *Ozobranchus margoi* (oral leeches); (b) *Tubicinella cheloniae* (burrowing barnacle); (c) *Chelonibia testudinaria* (barnacle).

EPIBIONTES

“estações de limpeza”

AVALIAÇÃO EXTERNA



AVALIAÇÃO EXTERNA

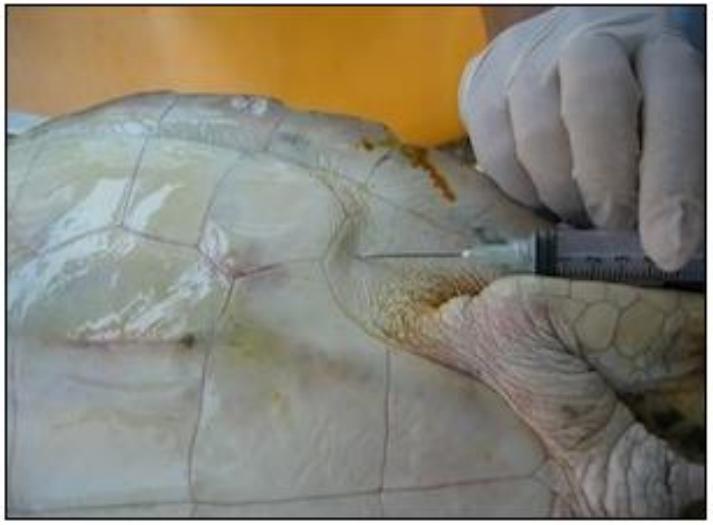
Tabela 1 – Número e tamanho de tumores usados para o posicionamento dentro de uma categoria de escore de tumor para tartarugas-verdes com fibropapilomatose (WORK et al., 1999)

	Escore de tumor			
	0	1	2	3
Tamanho do tumor				
(A) < 1 cm	0	1-5	>5	>5
(B) 1 – 4 cm	0	1-5	>5	>5
(C) > 4 – 10 cm	0	0	1-3	>4
(D) > 10 cm	0	0	0	>1

AVALIAÇÃO EXTERNA

Figure 2. Deep cloacal temperature is representative of the turtle's recent environmental temperature exposure. Photo credit: Dr. Charles Innis.

AVALIAÇÃO EXTERNA



DECOMPOSIÇÃO DA CARCAÇA

DECOMPOSIÇÃO DA CARCAÇA

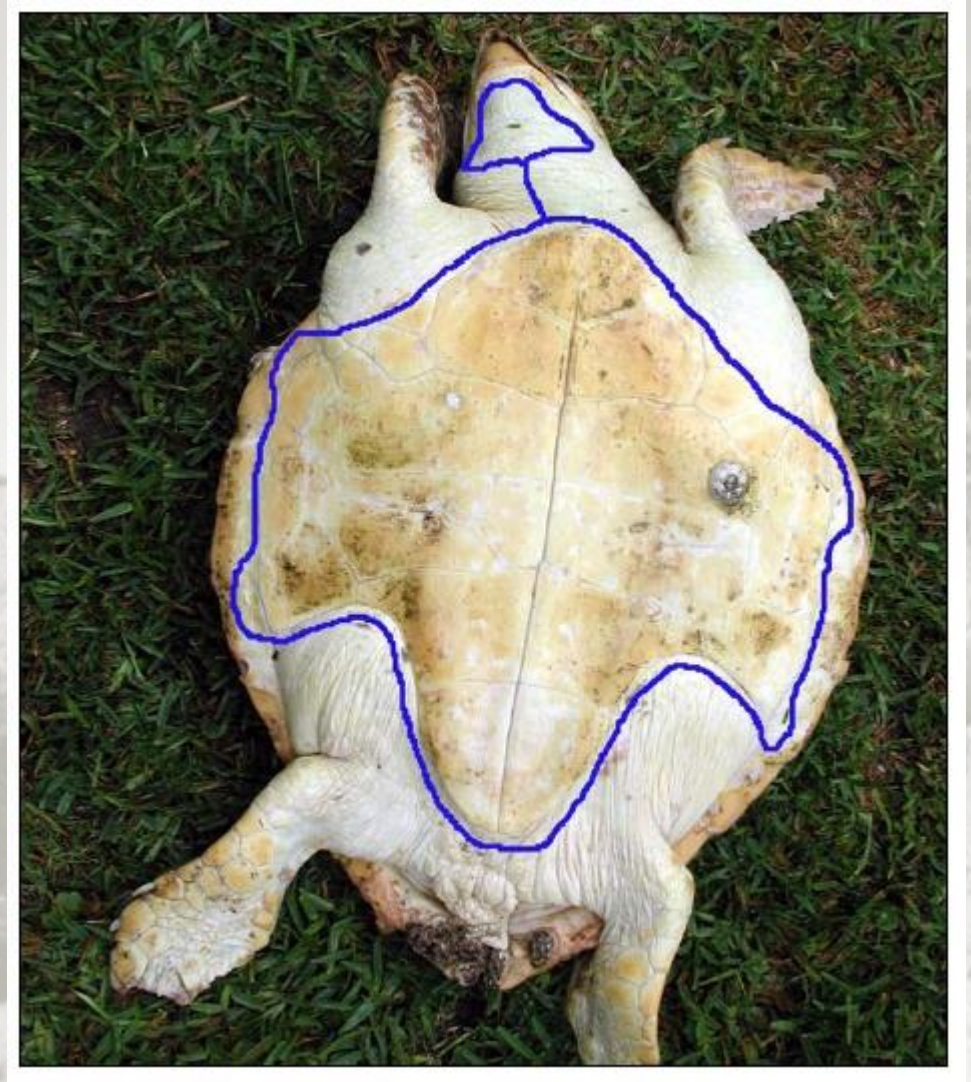
Table 2. Carcass condition and code as assigned in Australia.

Code	Description
D1	Live but subsequently died; unsuccessful rescue.
D2	Dead, carcass in good condition. • fresh; suitable for pathology or resembling a carcass fresh enough for eating.
D3	Dead, carcass fair. • decomposed but organs intact; autolysis noted on gross examination.
D4	Dead, carcass poor • advanced decomposition with internal organs falling apart.
D5	Dead, mummified carcass with skin holding bones together.
D6	Dead, disarticulated bones with no soft tissue remaining.

Rowles, T.K., F.M. Van Dolah, and A.A. Hohn, Gross necropsy and specimen collection protocols (2001). In: CRC Handbook of Marine Mammal Medicine 2nd edition, L.A. Dierauf and F.M.D. Gulland, Editors., CRC Press: Boca Raton. p. 449-470.

Limpus, C.J. (2007). Database manual- Turtle conservation monitoring project and monitoring of marine wildlife mortality and stranding. QPWS/EPA, Brisbane.

AVALIAÇÃO INTERNA

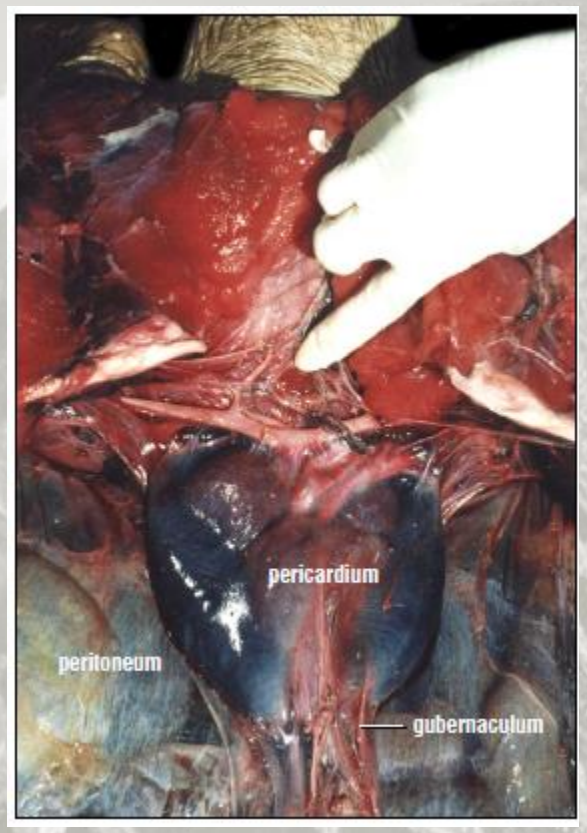


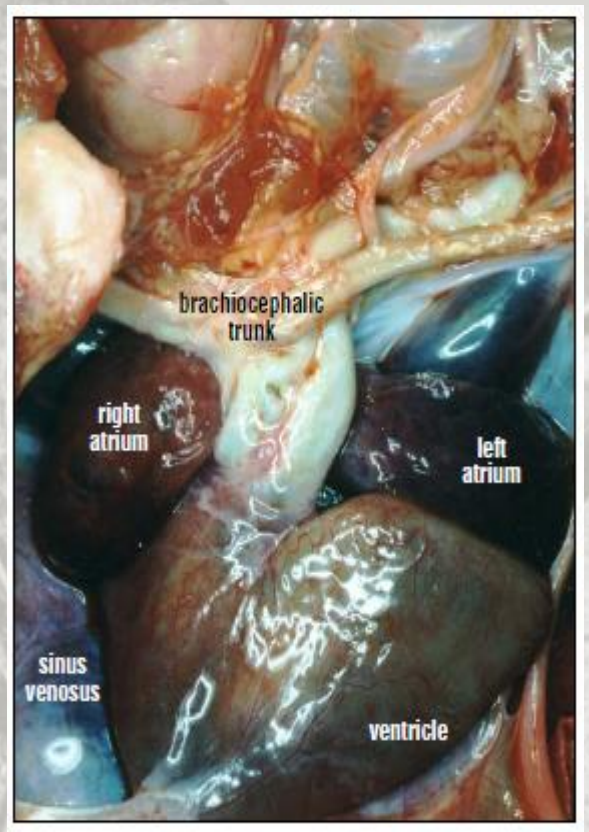
AVALIAÇÃO INTERNA

Figure 4. Postmortem removal of the plastron for internal examination. **A**, cutting through the soft tissue at the plastron-carapace junction, with the turtle in dorsal recumbency. **B**, retraction of the plastron by using a hook, with excision of attached muscular tissue close to it. **C**, a turtle carcass with the plastron completely removed, allowing assessment of pectoral muscles and the celomic cavity.

AVALIAÇÃO INTERNA

AVALIAÇÃO INTERNA





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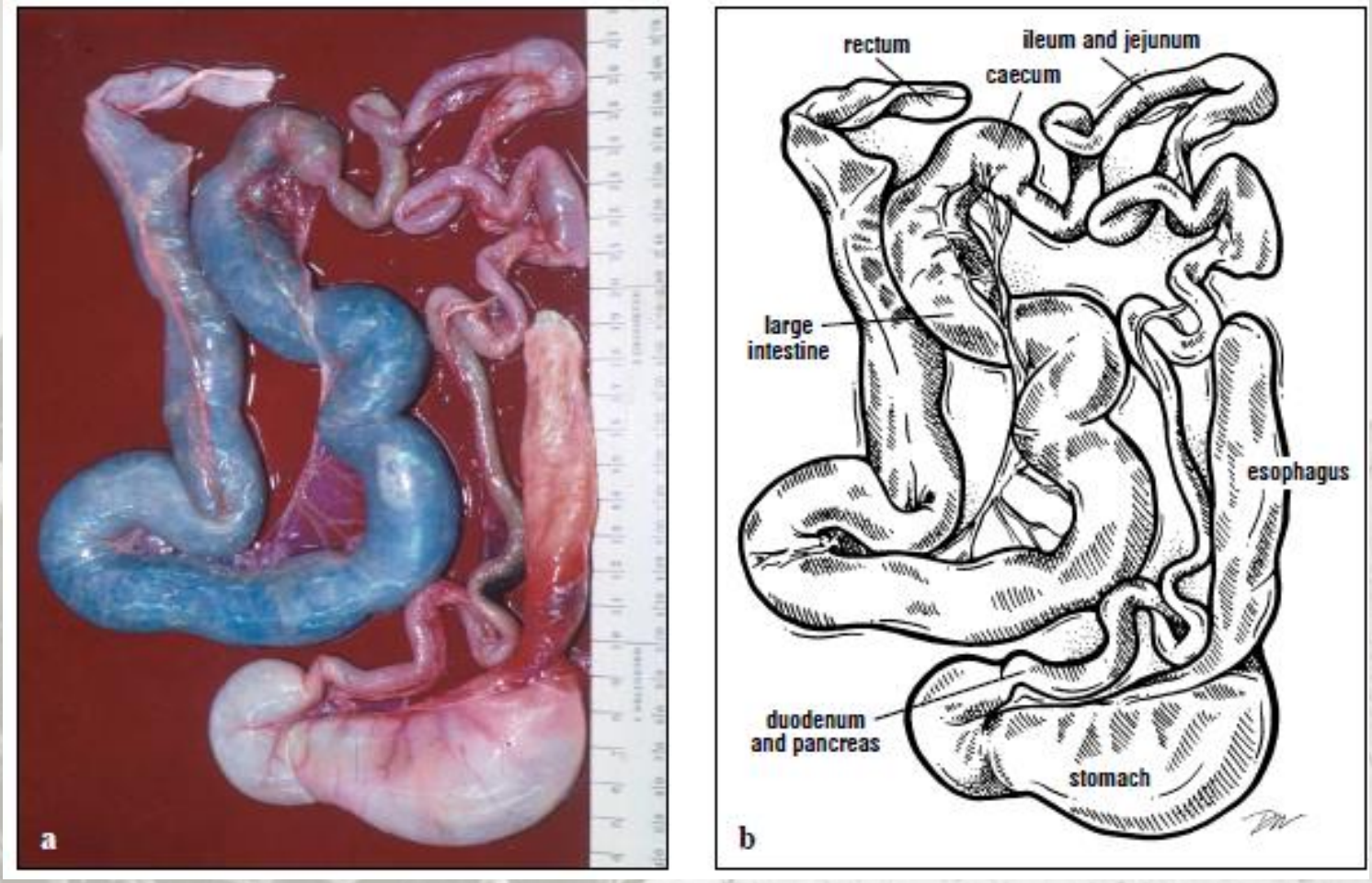

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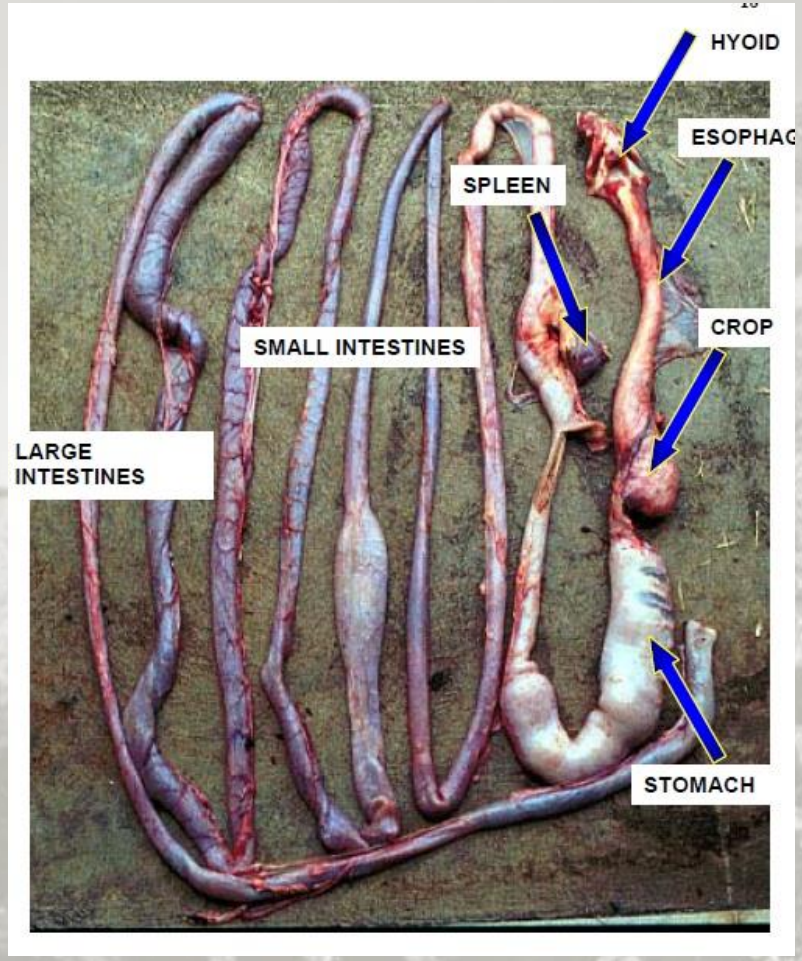

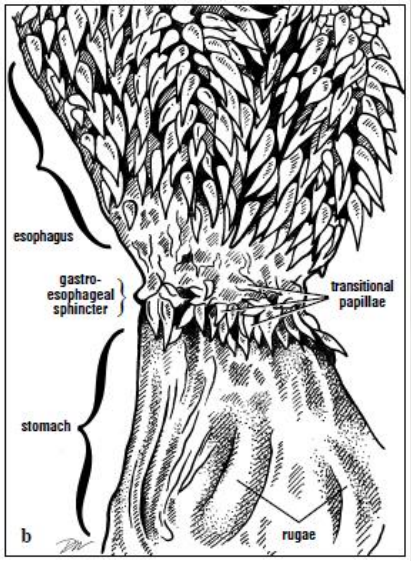

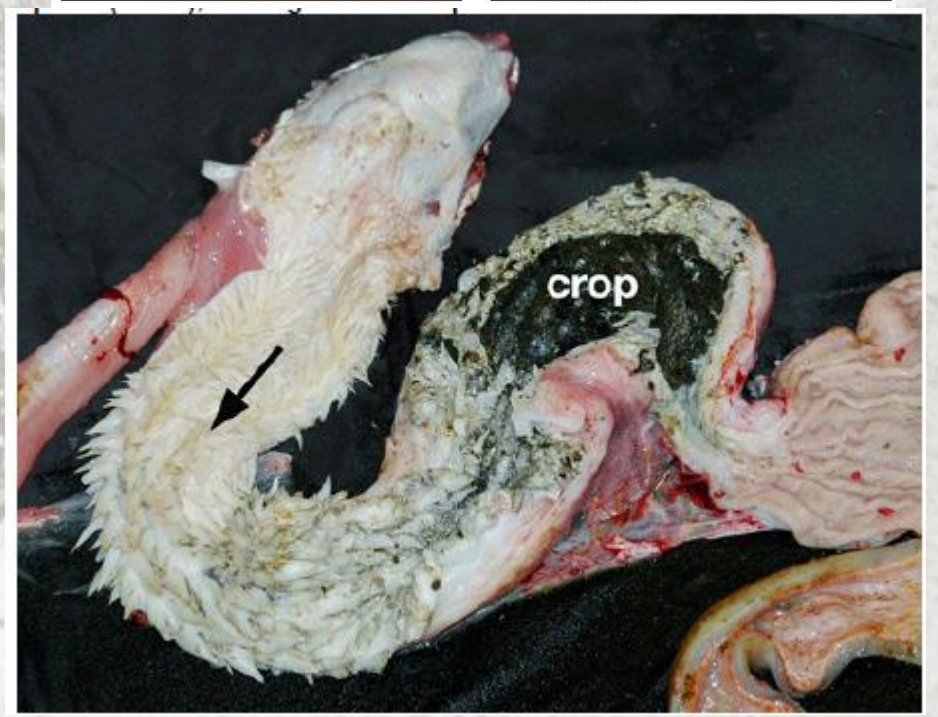

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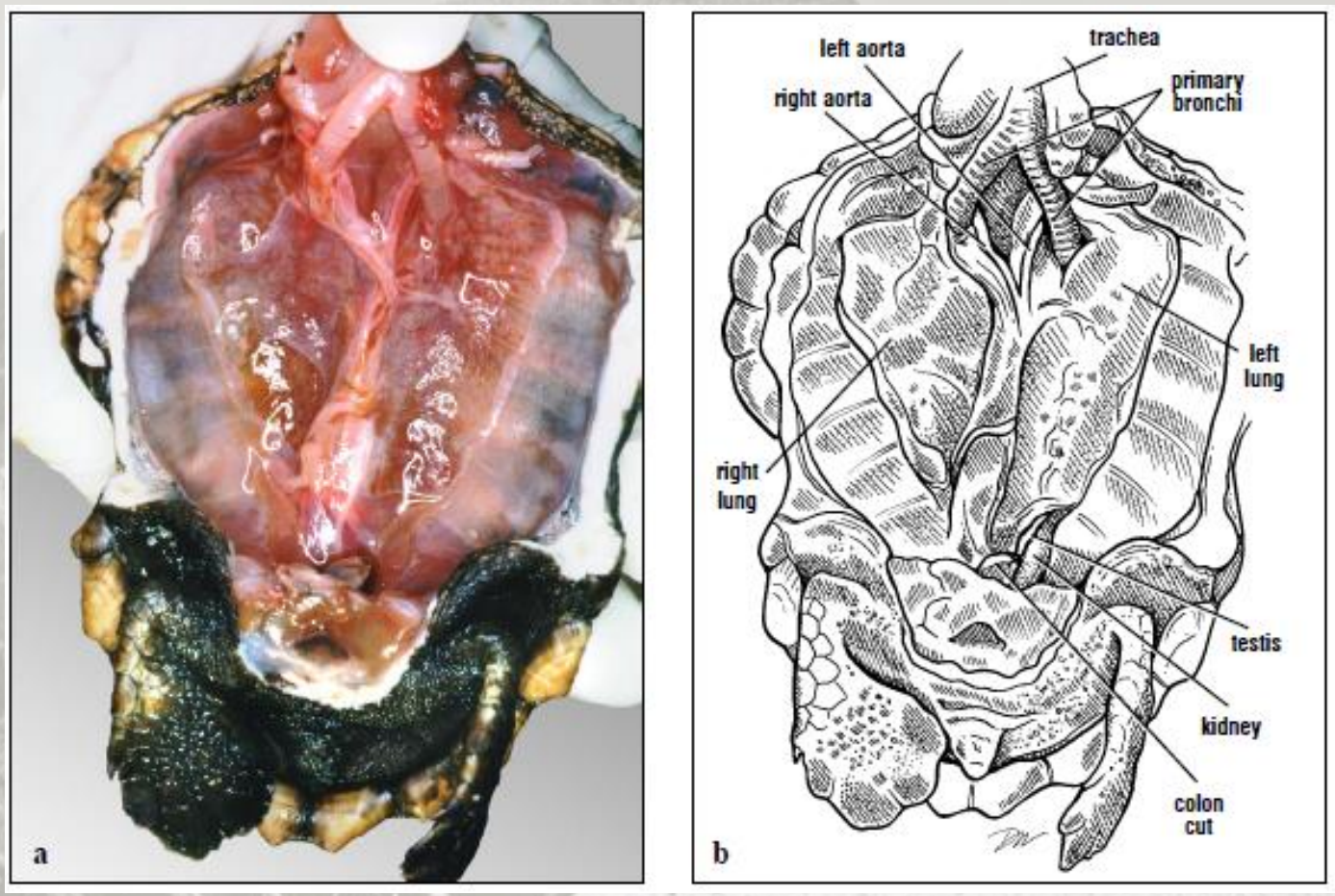

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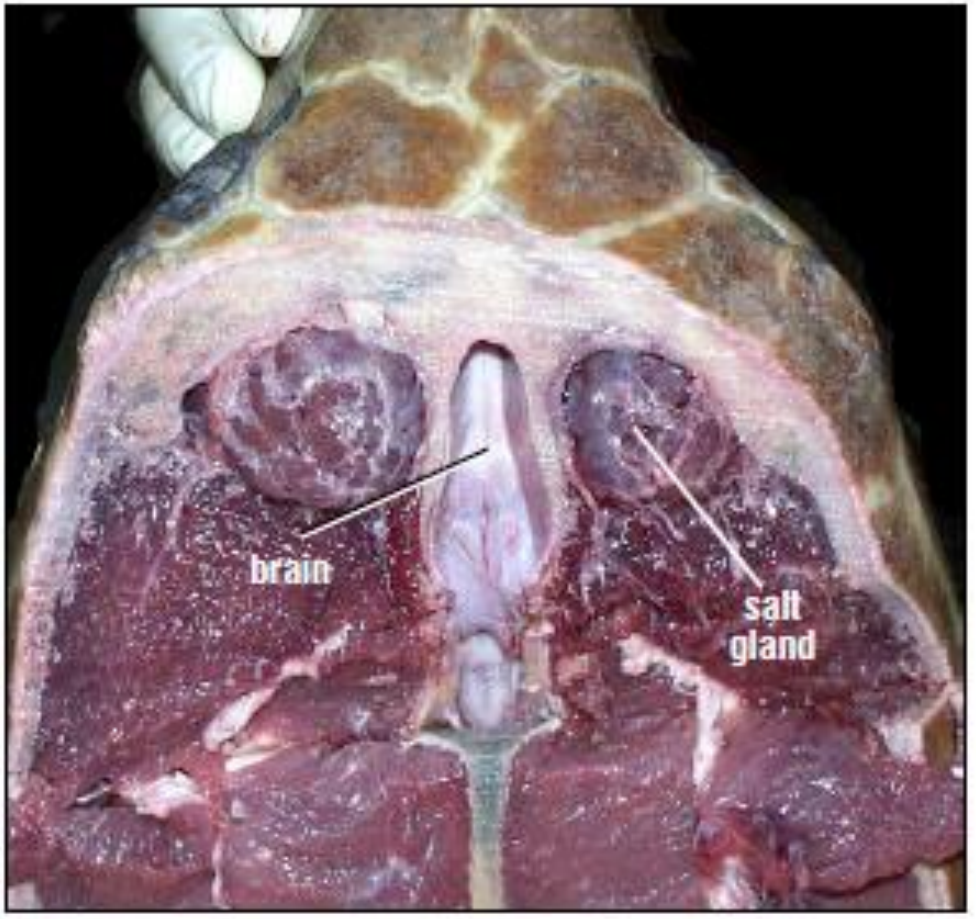
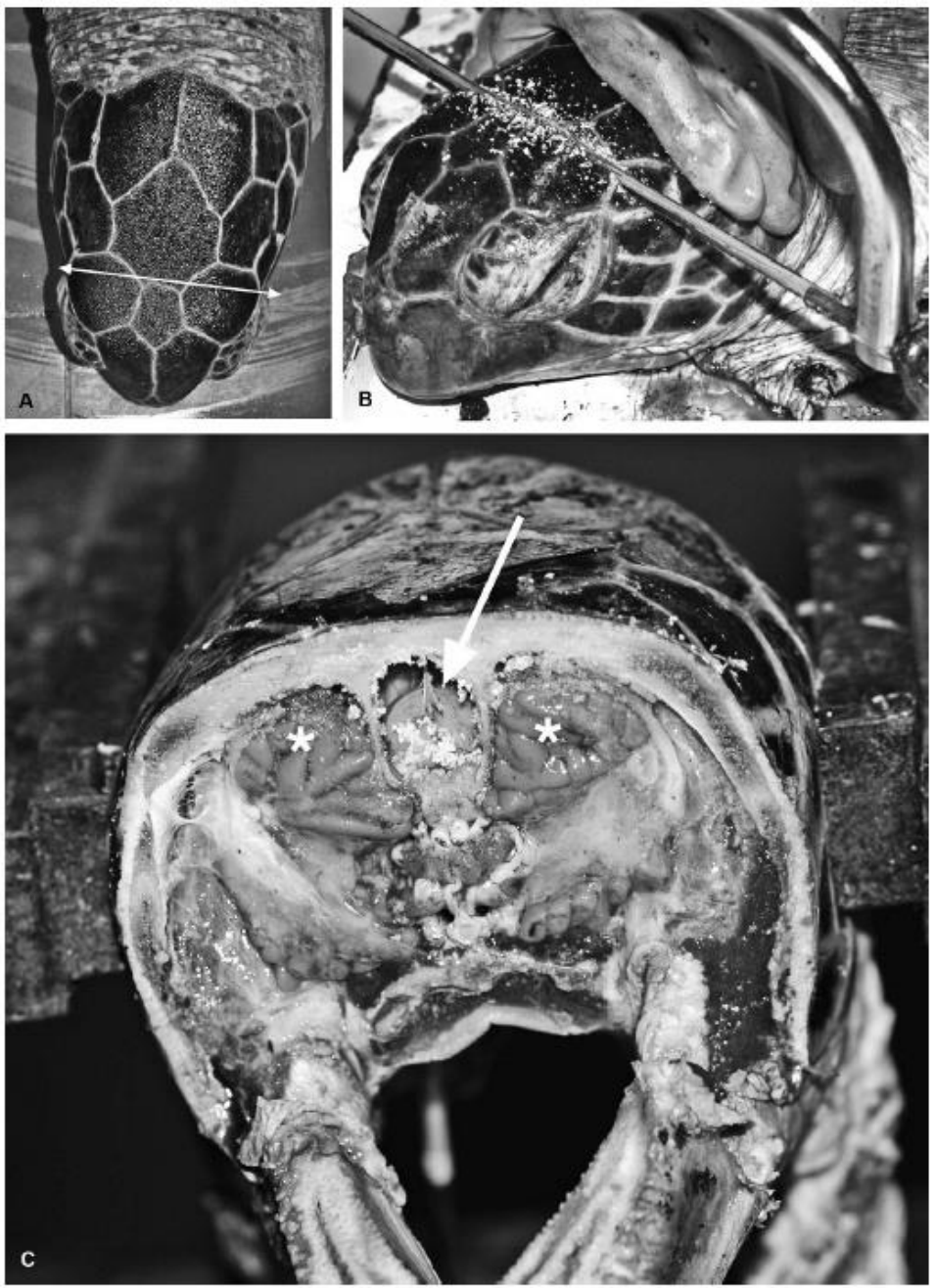
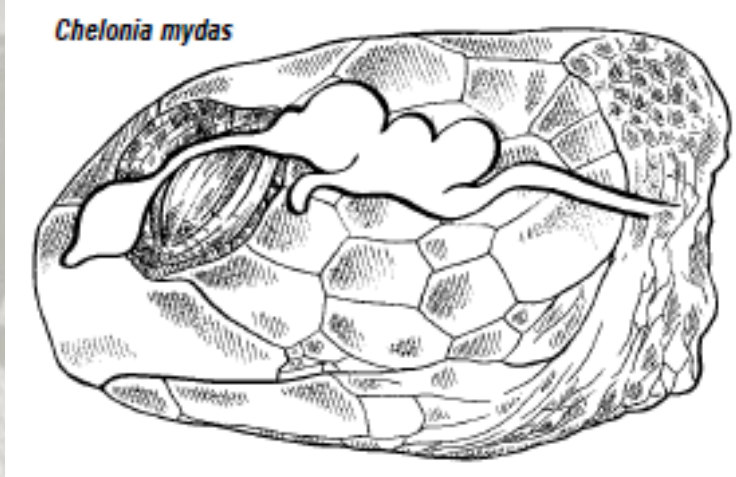


LOCALIZAÇÃO DOS ÓRGÃOS INTERNOS

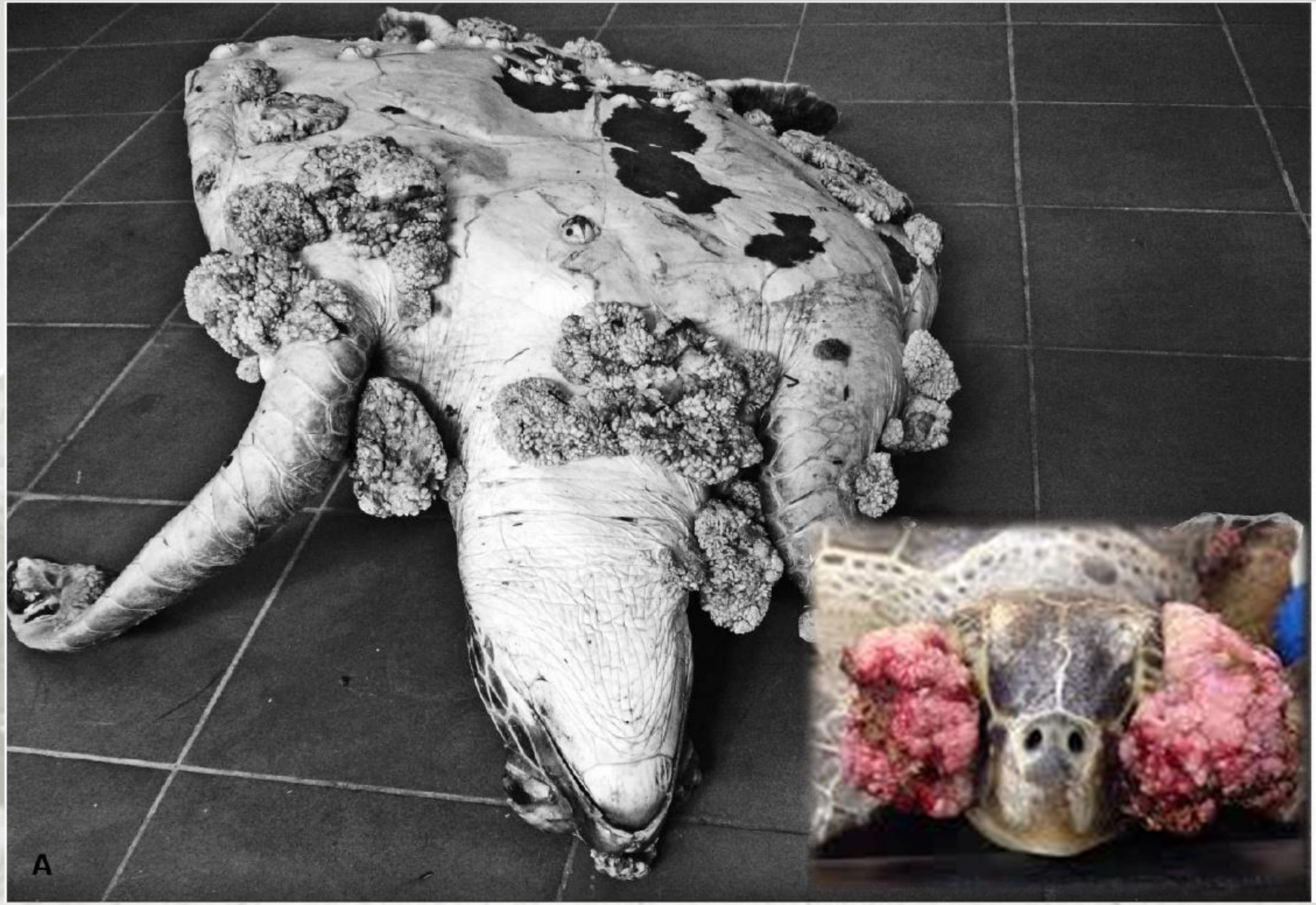




INFECÇÕES POR VÍRUS, BACTÉRIAS E PARASITAS

E outras alterações patológicas

FIBROPAPILOMATOSE



FIBROPAPILOMATOSE

• Descrita em 1939 como um caso isolado, na Flórida, por SMITH & COATES;

• Atualmente estima-se prevalência maior que 50% nas populações de Chelonia mydas; Em algumas populações ultrapassa 90%;

• Afeta as 7 espécies de tartarugas marinhas;

-ETIOLOGIA PRATICAMENTE DESCONHECIDA

Hipóteses: Vírus / parasitas metazoarios / radiação UV / Carcinógenos químicos / poluentes/ temperatura / Fatores genéticos

Fortes evidências mais recentes: envolvimento de um herpervírus / lesões associadas podem ser secundárias a um sistema imunológico comprometido;

• diferenças no nº de linfócitos / glóbulos vermelhos de indivíduos afetados e indivíduos saudáveis. Consequência de infecção viral? Imunossupressão devido à contaminantes?

• Vetor: *Ozobranchus* sp. ??

VÍRUS

• 6 famílias de vírus ocorrem em quelônios : Herpesviridae, Papillomaviridae, Iridoviridae, Reoviridae Retroviridae e Togaviridae;

• Danos celulares que favorecem especialmente bactérias e fungos;

• HERPESVIRUS: “Grey-patch disease” (lesões cutâneas pustulares), ulceras no pulmão, lesões nos olhos e traquéia e fibropapilomas internos e externos;

Thiago Malpighi 2015

Thiago Malpighi 2015

Table 1 Percentage of CFPHV detection by turtle species

Turtle species common name	Number of turtle individuals analysed	Results from PCR CFPHV detection by type of tissue			Total turtles detected CFPHV positive	% of CFPHV detection by turtle species
		FP exhibiting	healthy + CFPHV	CFPHV free		
Green (*Cm*) 	208	37	24	147	61	29.3%
Loggerhead (*Cc*) 	61	0	7	54	7	11.5%
Leatherback (*Dc*) 	20	0	4	16	4	20.0%
Hawksbill (*Ei*) 	28	0	7	21	7	25.0%
Olive Ridley (*Lo*) 	20	0	3	17	3	15.0%
Total sea turtle individuals analysed	337	37	45	255	82	24.3%

Summary table of number of turtle species individuals analysed for Chelonid fibropapilloma-associated herpesvirus (CFPHV) DNA. Results are listed as either CFPHV positive in FP exhibiting turtles clinically healthy carrying CFPHV DNA, or CFPHV free (CFPHV negative) in clinically healthy turtles. For detailed description of population species see Additional file 2.

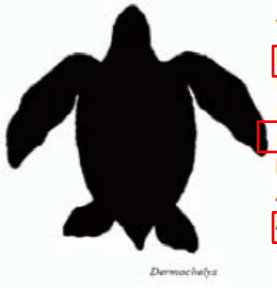
INFECÇÕES POR VÍRUS, BACTÉRIAS E PARASITAS

- Número de espécies por hospedeiro:

Caretta caretta. Loggerhead sea turtle

Virus	1
Bacteria	14
Fungi	4
Protozoa	2
Plathelminthes	28
Nematodes	5
Annelids	1
Arthropods	11

Dermochelys coriacea. Leatherback sea turtle



Virus	1
Bacteria	11
Fungi	1
Protozoa	1
Plathelminthes	4
Nematodes	-
Annelids	-
Arthropods	4

Chelonia mydas. Green sea turtle

Virus	2
Bacteria	48
Fungi	6
Protozoa	4
Plathelminthes	53
Nematodes	1
Annelids	2
Arthropods	7

Eretmochelys imbricata. Hawksbill sea turtle

Virus	1
Bacteria	3
Fungi	5
Protozoa	-
Plathelminthes	17
Nematodes	-
Annelids	3
Arthropods	2

Lepidochelys olivacea. Olive Ridley sea turtle

Virus	1
Bacteria	1
Fungi	1
Protozoa	-
Plathelminthes	3
Nematodes	-
Annelids	1
Arthropods	3

Table 1. Causes of Mortality for Green Turtles Necropsied in Southern Queensland (2006–2009) by Organ System, Irrespective of Season, Age, or Gender

Disease	*n*	% of all diseases
General		
Systemic microbiological infection	8	5.2
Systemic inflammation	4	2.6
Hypovolemia	2	1.3
Trauma	8	5.2
Spirorchiidiasis		
Neurological	28	18.3
Cardiovascular	6	3.9
Gastrointestinal	15	9.8
Multiorgan	15	9.8
Protozoal		
Unidentified apicomplexan parasite	1	0.7
Coccidiosis	3	2.0
Integumentary		
Fibropapillomatosis	1	0.7
Digestive (gastrointestinal)		
Impaction	18	11.8
Foreign body	7	4.6
Inflammation (primary and secondary)	6	3.9
Rupture	4	2.6
Respiratory		
Asphyxiation	3	2.0
Pneumonia (pulmonary inflammation)	11	7.2
Neurological		
Meningoencephalitis (nonparasite)	5	3.3
Excretory		
Nephritis	2	1.3
Uro-cloacal-genital		
Penile prolapse	1	0.7
Rectal abscessation	2	1.3
Ectopic oviduct	1	0.7
Skeletal		
Humeral osteitis	2	1.3
Total		100

CAUSAS DE MORTALIDADE: Endoparasitas
Desordens gastrointestinais
Infecção generalizada
Trauma

SPIRORCHIIDAE

FLINT et al. Health Surveillance of Stranded Green Turtles in Southern Queensland, Australia (2006-2009): An Epidemiological analysis of causes of disease and mortality. ***EcoHealth***, v.7, p.135-145. 2009.

- ALTERAÇÕES PATOLÓGICAS:

- Parasitismo por trematodas SPIRORCHIIDAE = Lesões inflamatórias
Endocardite Mural, Arterite, Trombose (acompanhada pela formação de aneurismas), nódulos com parasitas, proliferação papilar para o lúmen dos vasos, depósitos de cálcio (lúmen), edema perivascular, infartos.

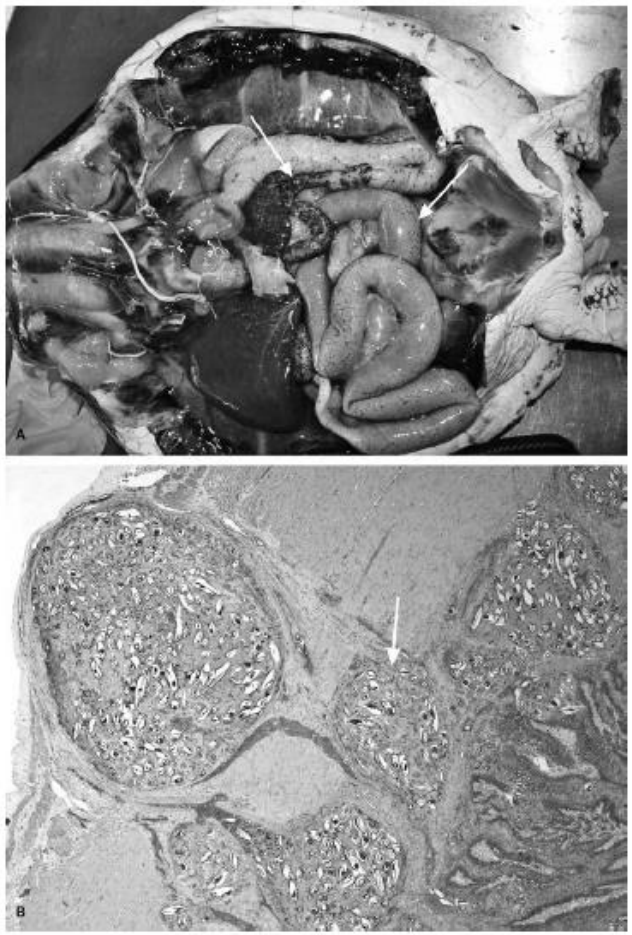


Figure 11. Lesions associated with spirorchiid trematode egg deposition in the intestinal tract. **A**, large numbers of variably sized, often coalescing dark raised masses, i.e., granulomas (arrows) are a common finding on the serosal surfaces. **B**, on microscopic examination, the granulomas, centered on large numbers of trematode eggs (arrow), are often noted throughout the wall but are usually larger in the muscularis externa and serosa, where they can significantly disrupt normal architecture, including sites of intestinal ganglia. Hematoylin and eosin. 20×.

FLINT et al. Health Surveillance of Stranded Green Turtles in Southern Queensland, Australia (2006-2009): An Epidemiological analysis of causes of disease and mortality. *EcoHealth*, v.7, p.135-145. 2009.

PARASITISMO POR SPIRORCHIIDAE

-75% dos casos: trematoda adulto e/ou ovos associados a inflamação granulomatosa

frequentemente em múltiplos órgãos em um mesmo animal

ovos encontrados em todos os sistemas, exceto sensorial, esquelético e reprodutor

associado a 41,8% das mortes.

DESORDENS GASTROINTESTINAIS

-Impactação(g-massa fezes/ , torção; (DIETA INCORRETA/MAT.ESTRANHO)

- Obstrução por fezes secas, fragmentos de conchas

- Constrição intestinal

11,8% dos casos, associada a 5,1% das mortes

em 60% dos casos estiveram associados SPIRORCHIIDAE TREMATOIDES - PLATIELMINTOS

-Corpos estranhos: associados a 4,6% das mortes.

- Enterite Coccidial devido a ***Caryospora cheloniae*** em 1,2% dos casos (doença parasitária/desenvol. baixo)

FIBROPAPILOMATOSE

-Presente em apenas 1,6% dos casos, associada a 0,7% das mortes;

- prevalência muito inferior a observada em outros locais ao redor do mundo

INFECÇÕES POR MICROORGANISMOS

-Achados comuns nas análises histológicas. No entanto a presença de bactérias foi considerada como bacteriose em apenas 0,7% dos casos, associada a 5,2% das mortes.

- infecções encontradas em todos os sistemas, exceto o reprodutor.

PNEUMONIA

-Associada a 7,2% das mortes

- relacionada a infecção por SPIRORCHIIDAE, por microorganismos, asfixia

MORTES NÃO-RELACIONADAS POR DOENÇAS

- Emalhamento em redes de pesca

- Predação / captura intencional

- injurias traumáticas

- ingestão de resíduos

- ingestão de peixes tetradontiformes (Diodontidae)

71,72 % dos animais encalhados morreram em decorrência de atividades antrópicas


PLOS ONE

RESEARCH ARTICLE

Causes of Stranding and Mortality, and Final Disposition of Loggerhead Sea Turtles (Caretta caretta) Admitted to a Wildlife Rehabilitation Center in Gran Canaria Island, Spain (1998-2014): A Long-Term Retrospective Study

OPEN ACCESS

Table 1. Number of cases and frequency distribution by causes of admission in loggerhead turtles wi… stranded during the period 1998–2014.

Cause of admission	Number of cases					
	SCL < 42 cm	SCL ≥ 42–70 cm	SCL ≥ 70 cm	Unknown SCL	TOTAL	(%)
Entanglement	560	131	0	254	945	50.8
Hooks/monofilament lines	28	141	1	51	221	11.9
Trauma (boat strike)	35	35	1	26	97	5.2
Infectious disease	70	13	0	20	103	5.5
Crude oil	31	4	0	17	52	2.8
Other causes	37	10	1	15	63	3.4
Ingestion of plastics	7	4	0	8	19	1
Buoyancy disorder	3	3	0	0	6	0.3
Shark attack	3	1	0	1	5	0.3
Malnutrition	17	0	0	7	24	1.3
Miscellany	7	2	0	0	9	0.5
Unknown/undetermined	137	58	2	182	379	20.4
TOTAL	898	392	5	565	1,860	100

doi:10.1371/journal.pone.0149398.t001

Rede pesca – anzol e linhas – barco – infecções – petróleo – flutuabilidade.

Fort Laudardale

Ajude-nos, nós precisamos de vocês!!!

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Venha fazer parte dessa equipe!

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