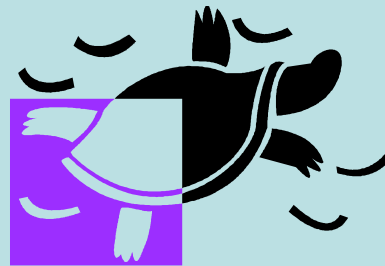


HAWAIIAN SEA TURTLES AND MORE

BY
ROBERT A. MORRIS DVM



SEA TURTLES OF THE WORLD



LEATHERBACK



LOGGERHEAD



HAWKSBILL



GREEN



KEMPS RIDLEY



OLIVE RIDLEY



FLATBACK



GREEN TURTLE OF HAWAII



HAWKSBILL TURTLE



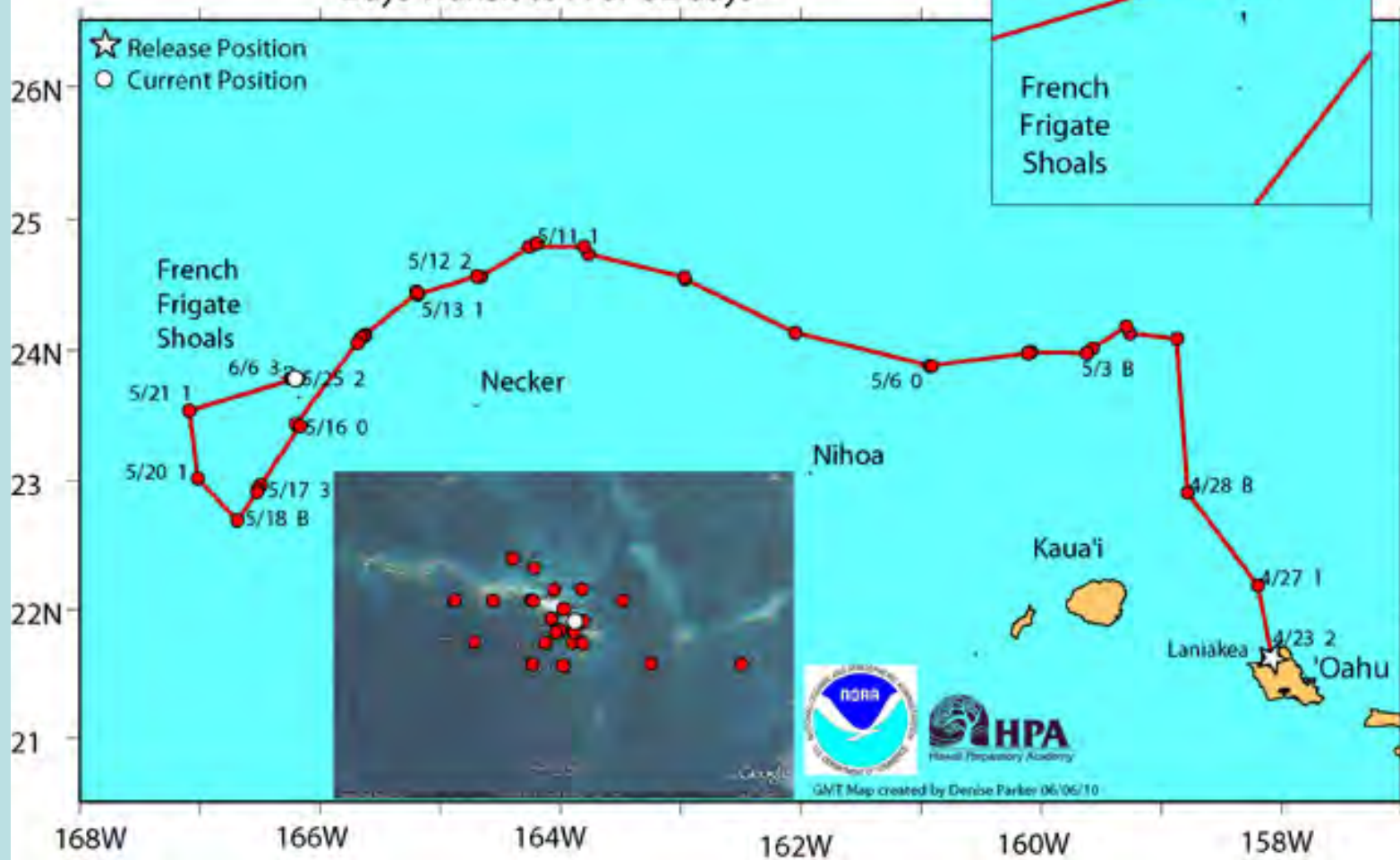
HAWKSBILL HEAD



HAWAIIAN ISLANDS NORTH PACIFIC OCEAN

TRAVEL TIME 25-35 DAYS
SPEED ABOUT 1 MILE/HR

Update as of 6/6/10:
 2010 satellite-tracked movements
 of female green turtle, Rambling Rose (L2), ID 71917
 TAM-2619 6/24 SCL: 87.0 cm
 Date deployed: 3/5/10 Days Transmitting: 93 days
 Days Transit to FFS: 32 days



Track of female from North shore of Oahu to French Frigate to lay eggs



transmitter

Same turtle laying eggs at French Frigate



NESTING AT FRENCH FRIGATE SHOALS

90% of Hawaiian turtles nest here

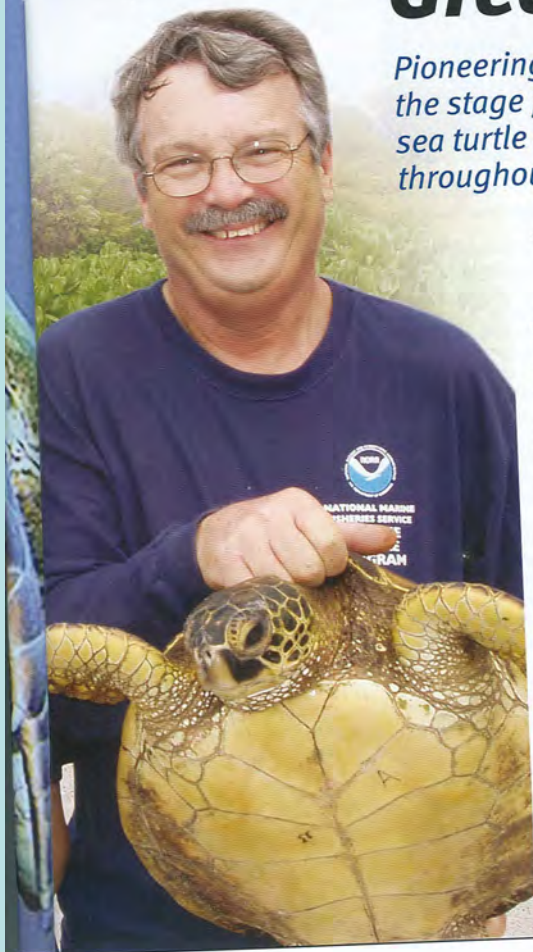
Migration to nest occurs about every 2-3 years



I HAVE BEEN CONTRACT VETERINARIAN FOR NATIONAL MARINE FISHERIES FOR OVER 15 YEARS

Green Sea Turtles of the Pacific: ***Saving the Hawaiian Green Turtle***

*Pioneering work on the honu set
the stage for current science-based
sea turtle conservation efforts
throughout the Pacific*



The story of the *honu* (or Hawaiian green turtle) is also the story of man. And prominent among the many involved with the conservation of this species is George Balazs, biologist and leader of the "core" Marine Turtle Research Program at NOAA Fisheries Pacific Islands Fisheries Science Center (PIFSC). His nearly 35-year career has been devoted to the study and survival of the Hawaiian green sea turtle.

In 1973, when Balazs set out to count the Hawaiian green sea turtles in the Northwestern Hawaiian Islands, he found just 67 nesting females at the uninhabited East Island of French Frigate Shoals. Subsequent research confirmed that the fate of the endemic *honu*, throughout the entire Hawaiian Island chain depended on fewer than 150 females nesting each year.

Thirty years later in 2002, on the same island, Balazs' research team counted 467 females – a nearly 300 percent increase!

"If someone had told me thirty years ago that the *honu* would become so visible and so enjoyed as part of our greater Hawaiian community today, I would not have believed it," Balazs says.

George "Keoki" Balazs, universally recognized honu expert, was honored with the National Conservation Achievement Award in March 2005 by the National Wildlife Federation for his work on the recovery of the Hawaiian green sea turtle.

HARVEST OF SEA TURTLES IN HAWAII



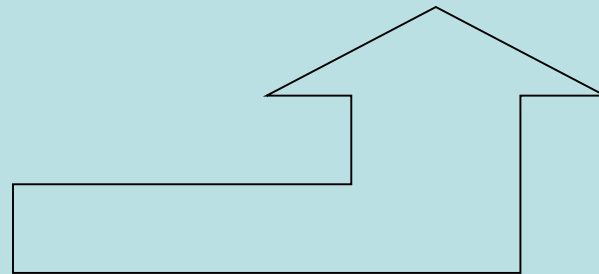
25,583 LBS

1972



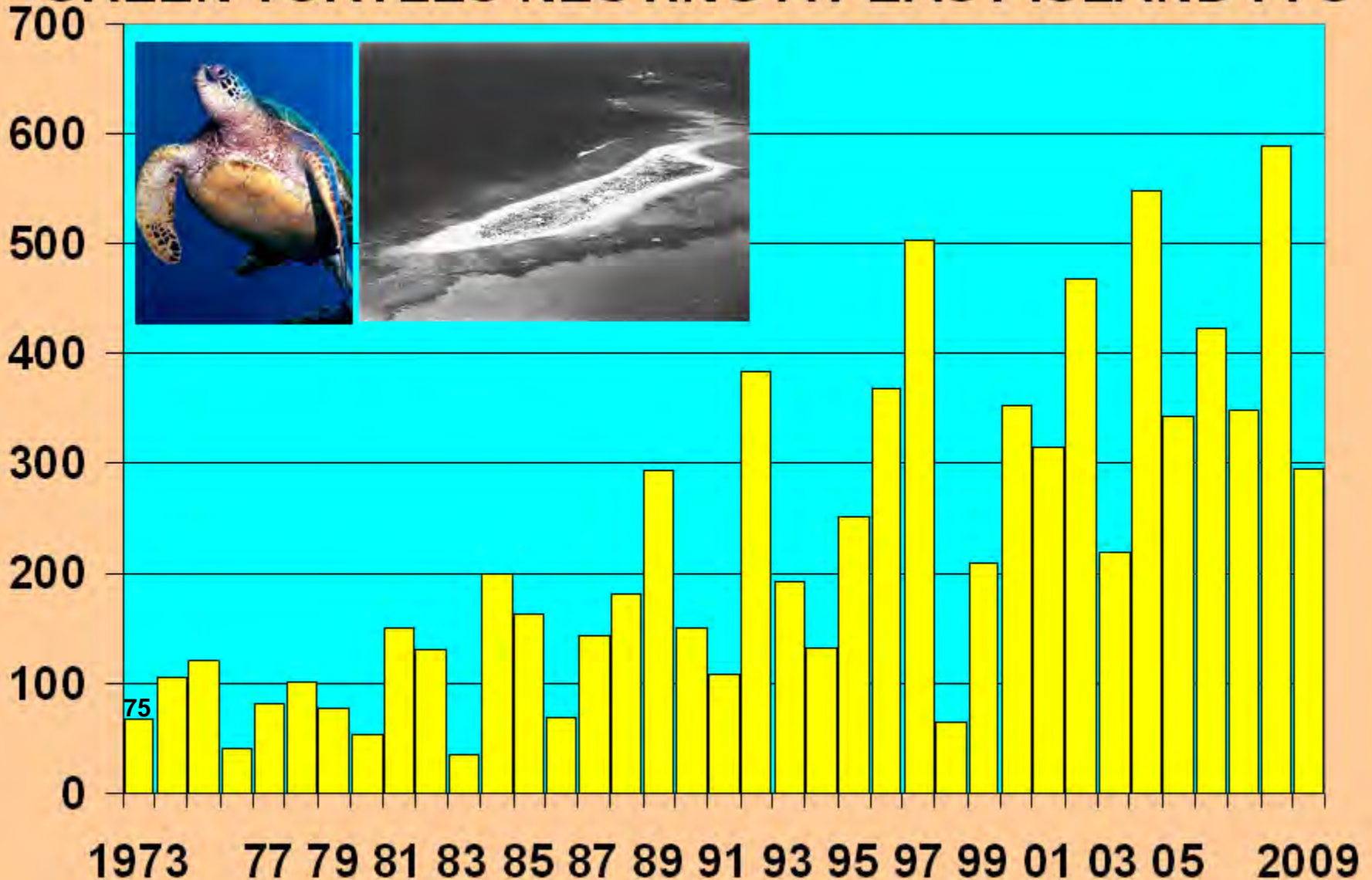
380 LBS

1963



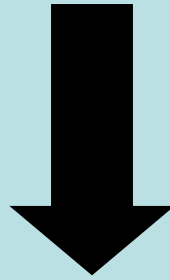
**A 1972 SURVEY OF THE NESTING TURTLES AT FF SHOALS SHOWED
ONLY 67 FEMALES**

GREEN TURTLES NESTING AT EAST ISLAND FFS

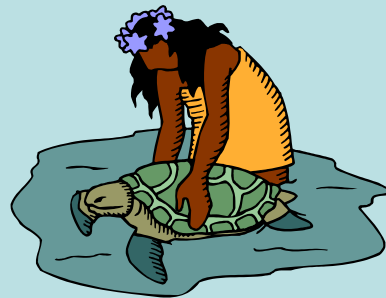


ANNUAL TREND FOR 37 SEASONS

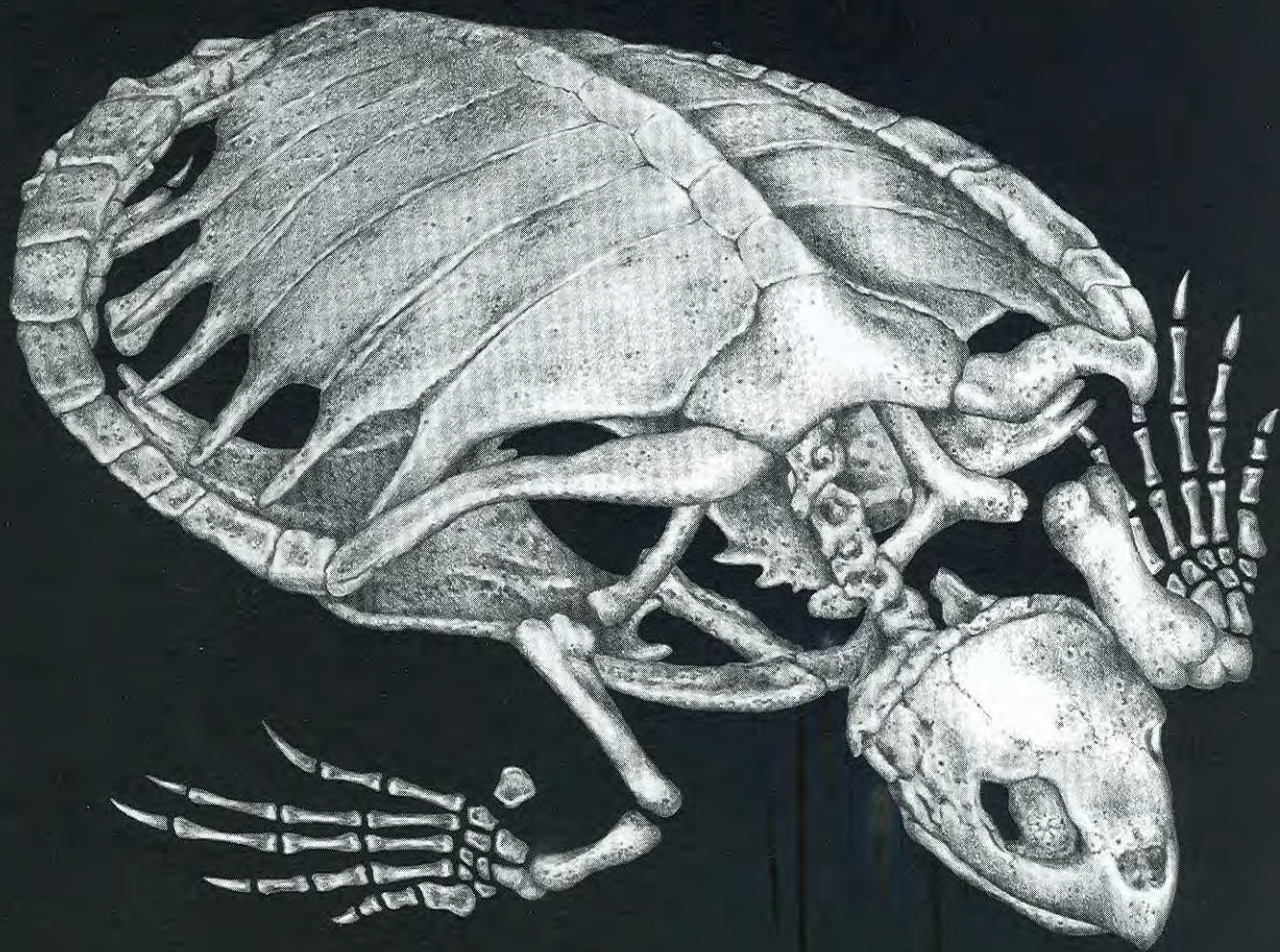
FEDERAL ENDANGERED SPECIES ACT



HAWAIIAN TURTLES LISTED AS THREATENED 1978



The Anatomy of Sea Turtles







MATURE MALE

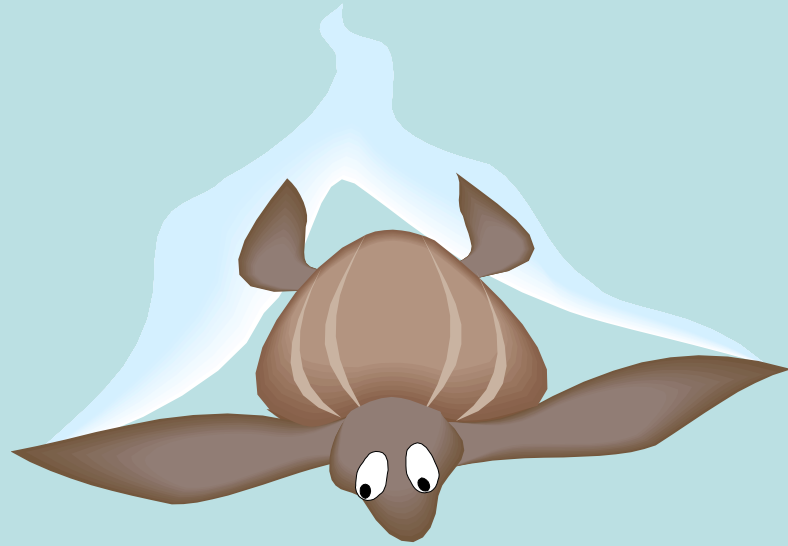


MATURE FEMALE

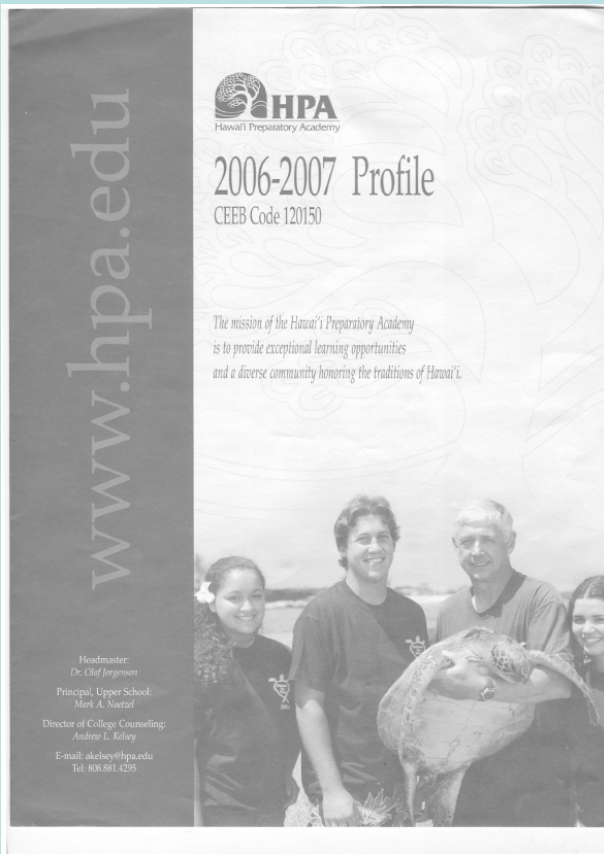
HOW LONG CAN THE GREEN TURTLE STAY SUBMERGED?



ONE STUDIES REPORTED 90% FOR 33 MIN OR LESS-NONE EXCEEDED 66 MIN OTHERS SAY UP TO 5 HOURS



WE BELIEVE TURTLES HAVE A SIMILAR LIFESPAN AS HUMANS



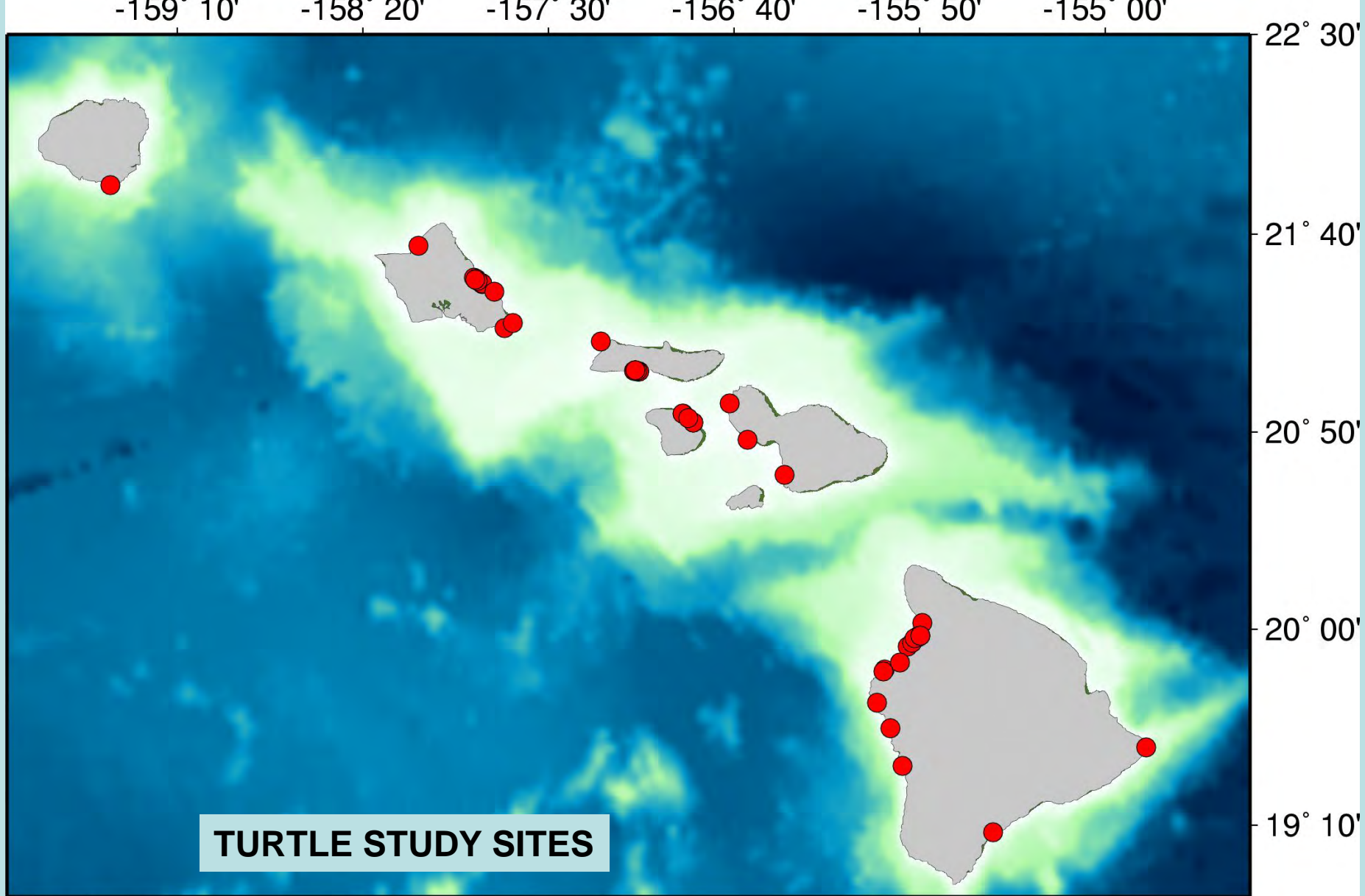
Welcome to MOP

MOP Home

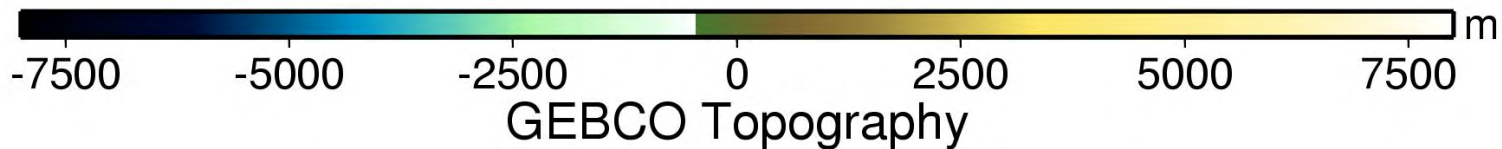


The Marine Option Program is an educational program within the University of Hawaii's ten-campus system. MOP is a unique opportunity for students in any field of study who have an interest in the ocean.

**HAWAII PREPARATORY ACADEMY,
KAMUELA, HAWAII HAS AN ACTIVE SEA TURTLE
RESEARCH PROGRAM THAT ASSISTS NOAA**



GMT 2006 Jul 28 19:07:56 seaturtle.org/maptool Projection: Mercator





STUDY SITE SETUP

U.S. GOVERNMENT/HPA
SEA TURTLE
RESEARCH



















PUMPING STOMACH FOR FOOD ANALYSIS



ALGAE FOR ANALYSIS















67715

WALTON COUNTY, FLORIDA
BAY OF PALM BEACH
APRIL 20, 2009



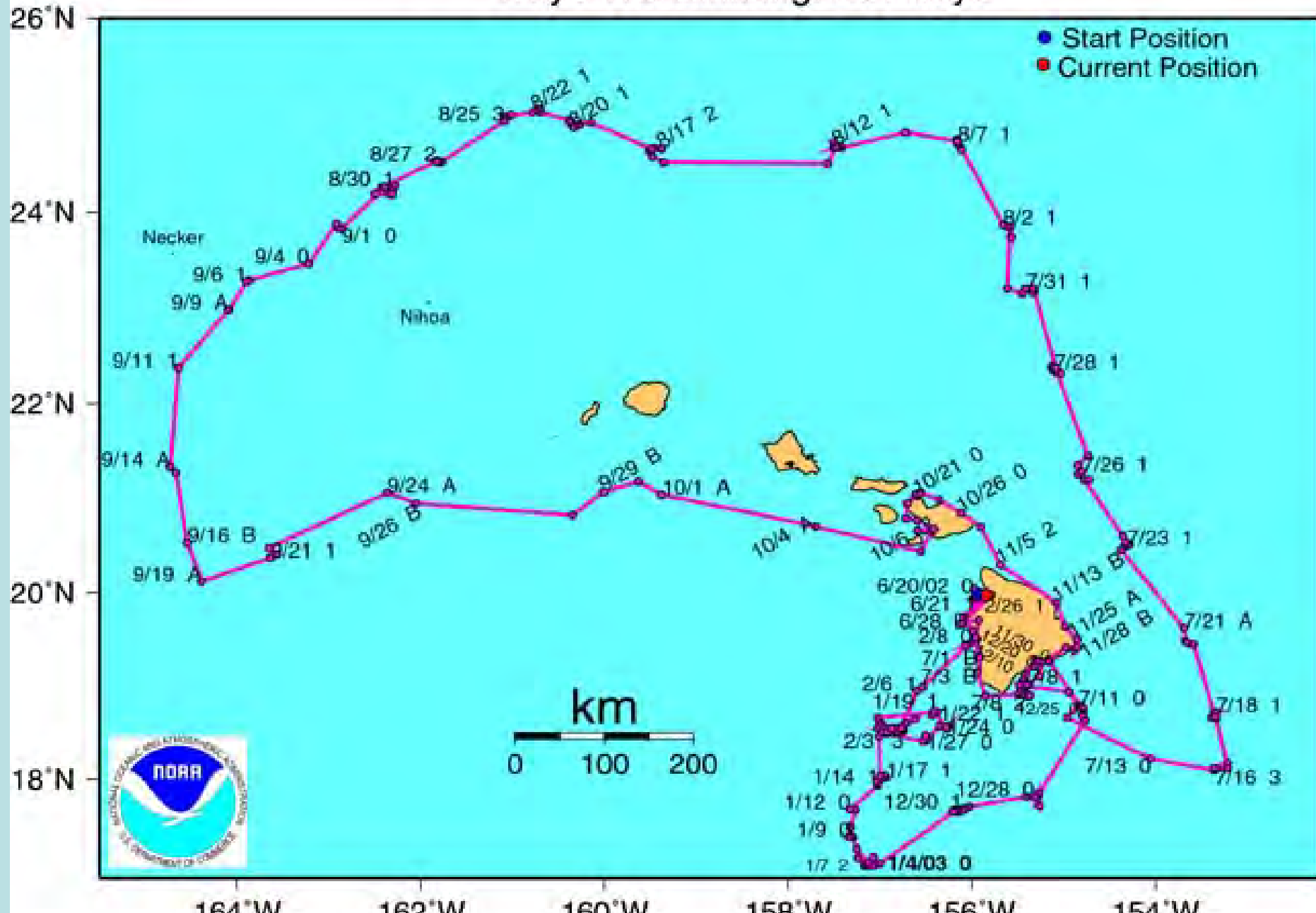




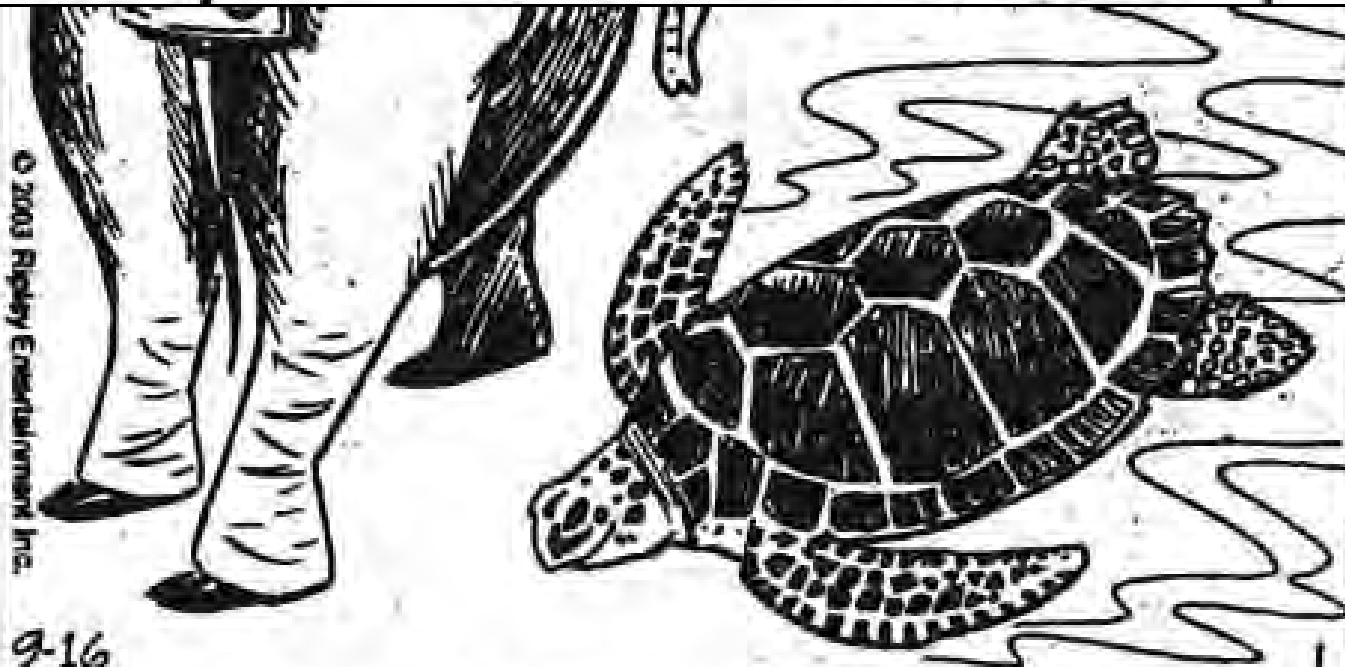


2002-2003 Movement of Mauna Lani Juvenile Green Turtle 22270

Duty Cycle: 12 hr on, 48 hr off SCL: 45.5 cm
Days Transmitting: 251 days



Ripley's — Believe It or Not!



© 2003 Ripley Entertainment Inc.

9-16

Believe It or Not! THE MARINE TURTLE RESEARCH PROGRAM in Honolulu, Hawaii, HAS TRACKED A JUVENILE GREEN TURTLE THAT TRAVELED 3,000 MILES IN EIGHT MONTHS AND RETURNED TO THE SAME AREA WHERE IT WAS FIRST RELEASED!

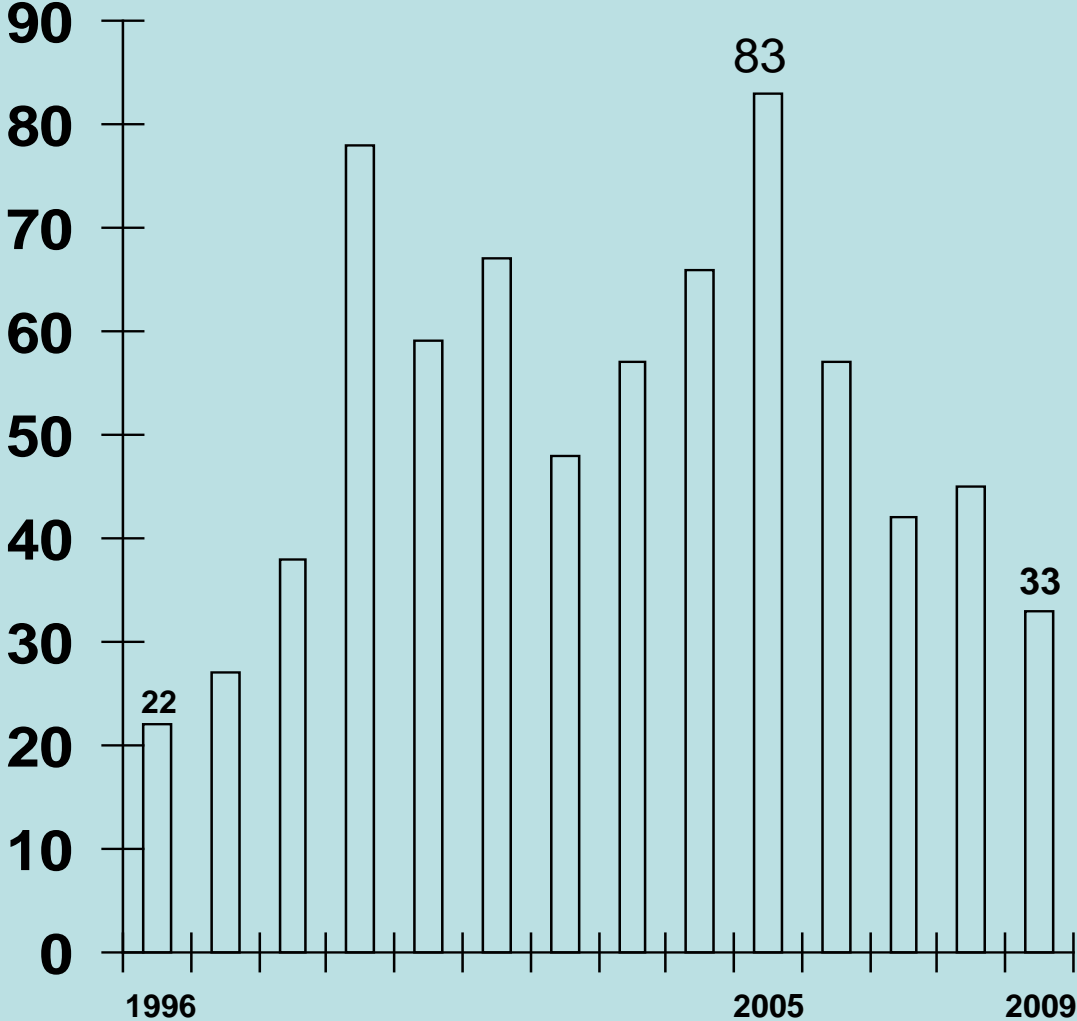
STRANDINGS

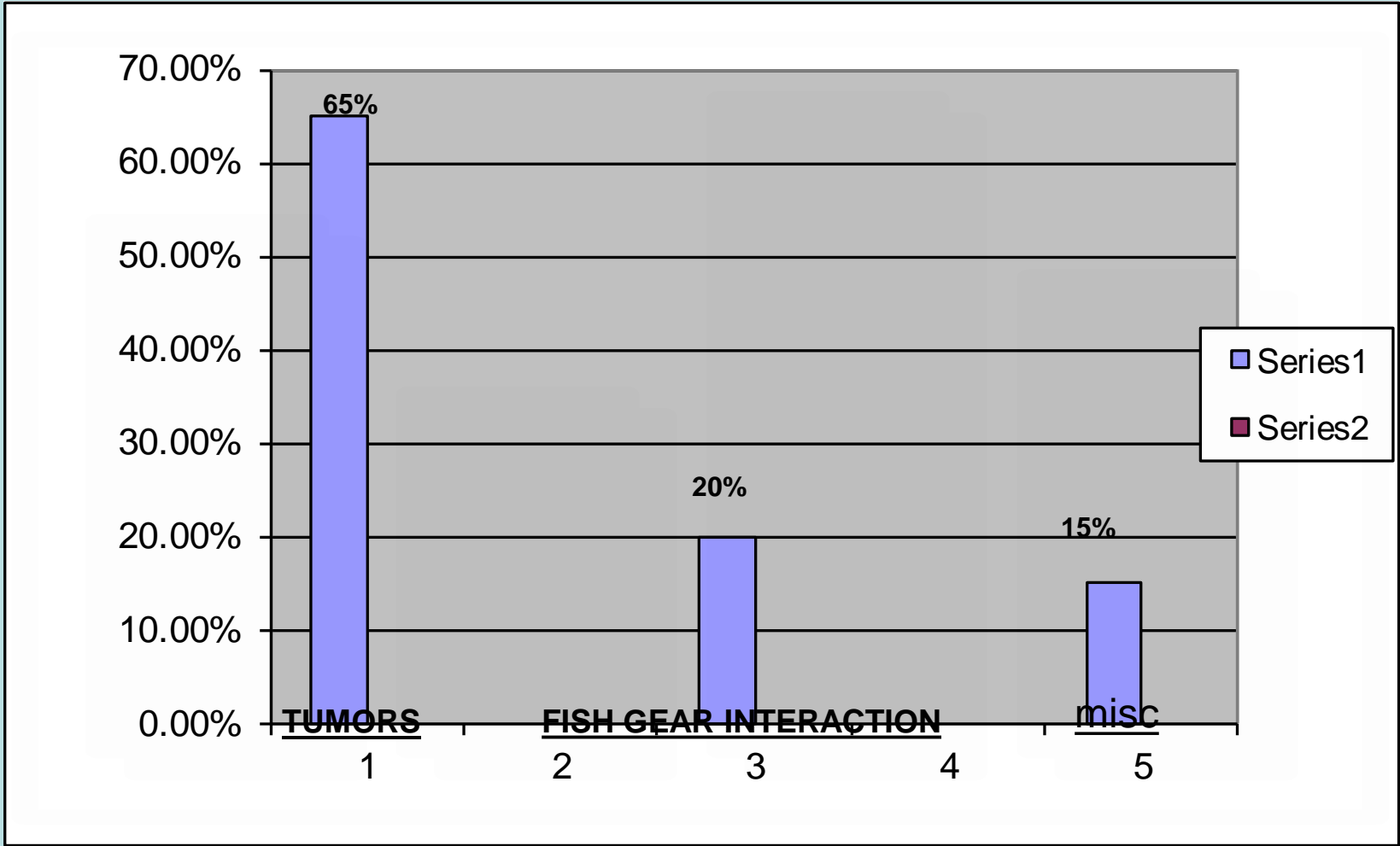
LIVE STRANDINGS EVALUATED BY VETERINARIAN
HAVE INCREASED FROM 22 IN 1996 TO A PEAK OF
83 IN 2005 and has declined to 33 in 2009

ABOUT 79% OF THESE STRANDINGS OCCUR ON THE MAIN
ISLAND OF OAHU

BECAUSE OF THE POOR HEALTH OF MANY OF THE TURTLES
DUE TO FIBRO-PAPILLOMA TUMORS-- ONLY
A SMALL PERCENTAGE CAN BE REHABILITATED

**LIVE STRANDINGS EVALUATED BY VETERINARIAN FOR 14 YEAR PERIOD
TOTAL NUMBER 752**





SUMMARY OF 752 LIVE STRANDINGS EXAMINED BY VETERINARIAN BY DIAGNOSIS
MISCELLANEOUS INCLUDES BOAT STRIKES, TRAUMA, SHARK BITES, ETC

Evaluation of stranded turtles





MOUTH AND THROAT EXAM



Canine speculum for hands free mouth exam



EXAM OF HEALTHY GREEN TURTLE-NOTE RESTRAINT



A HEALTHY FULL PLASTRON ON A GREEN TURTLE



NORMAL TURTLE ON RIGHT AND EMACIATED TURTLE ON LEFT



EYE EXAM



NORMAL EYE



CATARACT

CAN BE CAUSED BY TRAUMA AND/OR INFECTION



PALPATION OF SOFT AREAS



CLOSE OBSERVATION OF SKIN AND SHELL AREA IS IMPORTANT

Leech eggs



**A TURTLE COVERED WITH BARNACLES INDICATING INACTIVITY
AND PROBABLE SEVERE ILLNESS**



BLOOD DRAW FROM DORSAL CERVICAL SINUS



MOST COMMON CAUSE OF STRANDINGS

FIBROPAPILLOMAS

THESE TURTLES ARE:

EMACIATED

AMEMIC

HYPOPROTEINEMIC

BACTEREMIC

PARASITIZED WITH CARDIOVASCULAR
TREMATODES AND LEECHES



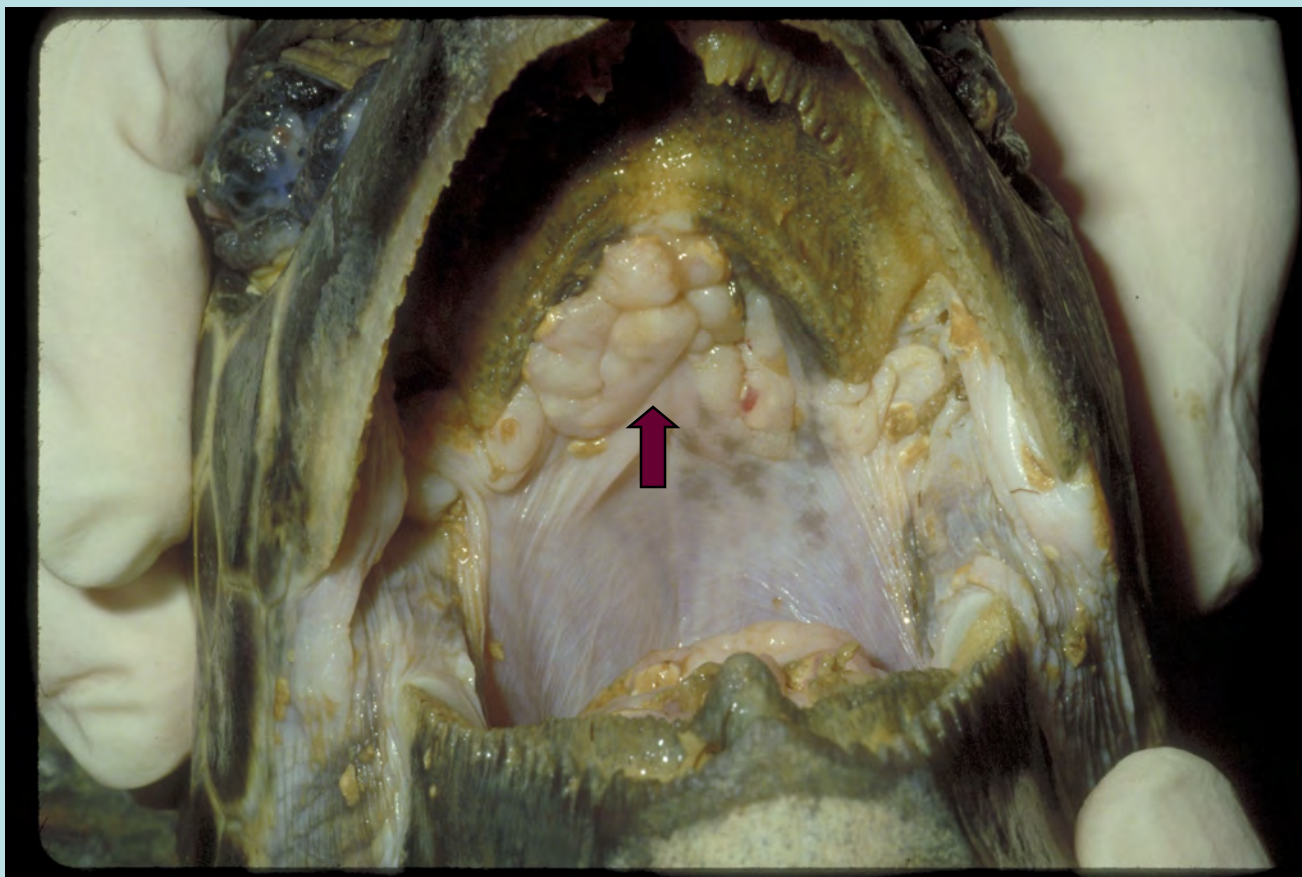
Eye tumor



**GLOTTIS TUMOR AND
EYE TUMORS**



Glottis and mouth tumor



TUMOR BLOCKING INTERNAL NARES



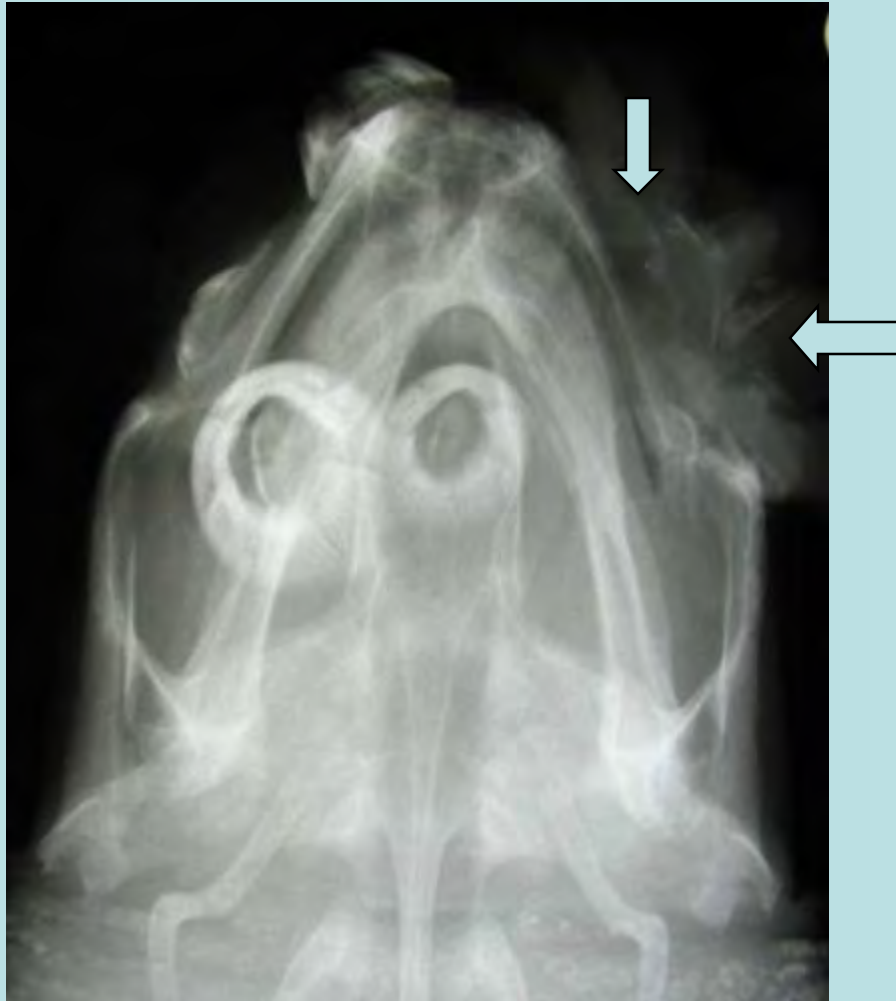
JAW HINGE TUMORS



NORMAL SKULL X-RAY

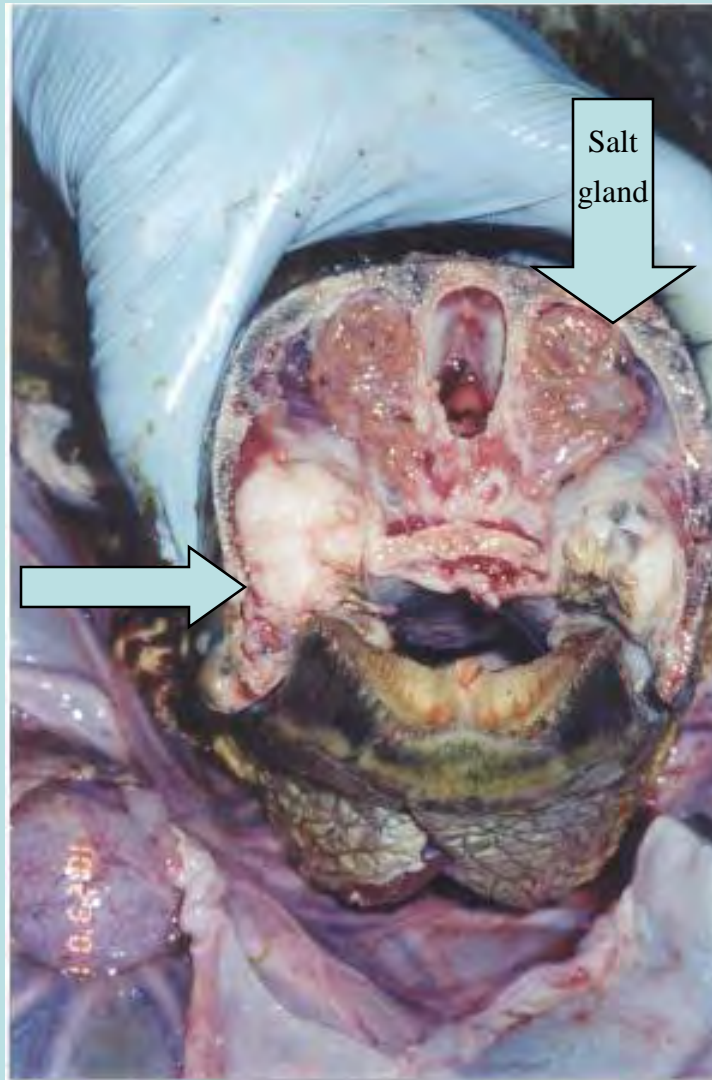


X-RAY SHOWING BONE DESTRUCTION BY TUMOR



X-RAY SHOWING DESTRUCTION OF MAXILLARY BONE

JAW HINGE TUMOR

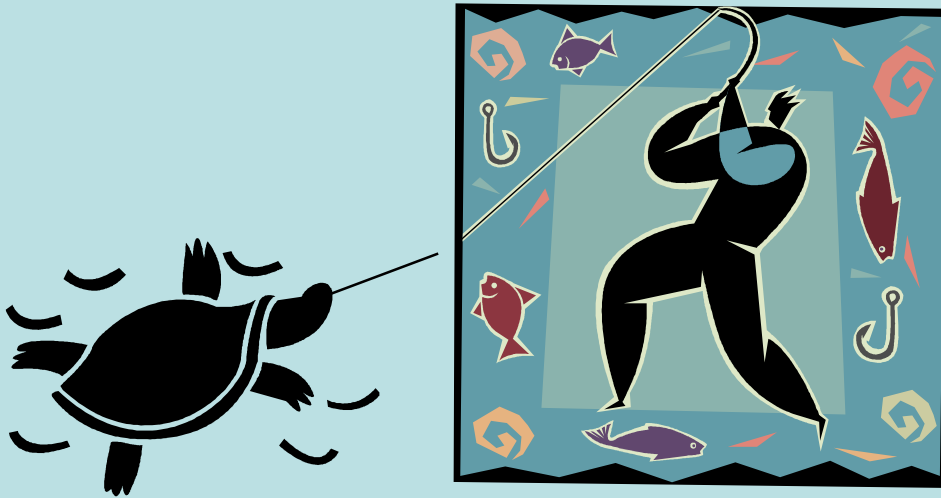


Invasive jaw hinge tumor showing salt gland

BIG PROBLEMS FOR THE TURTLES

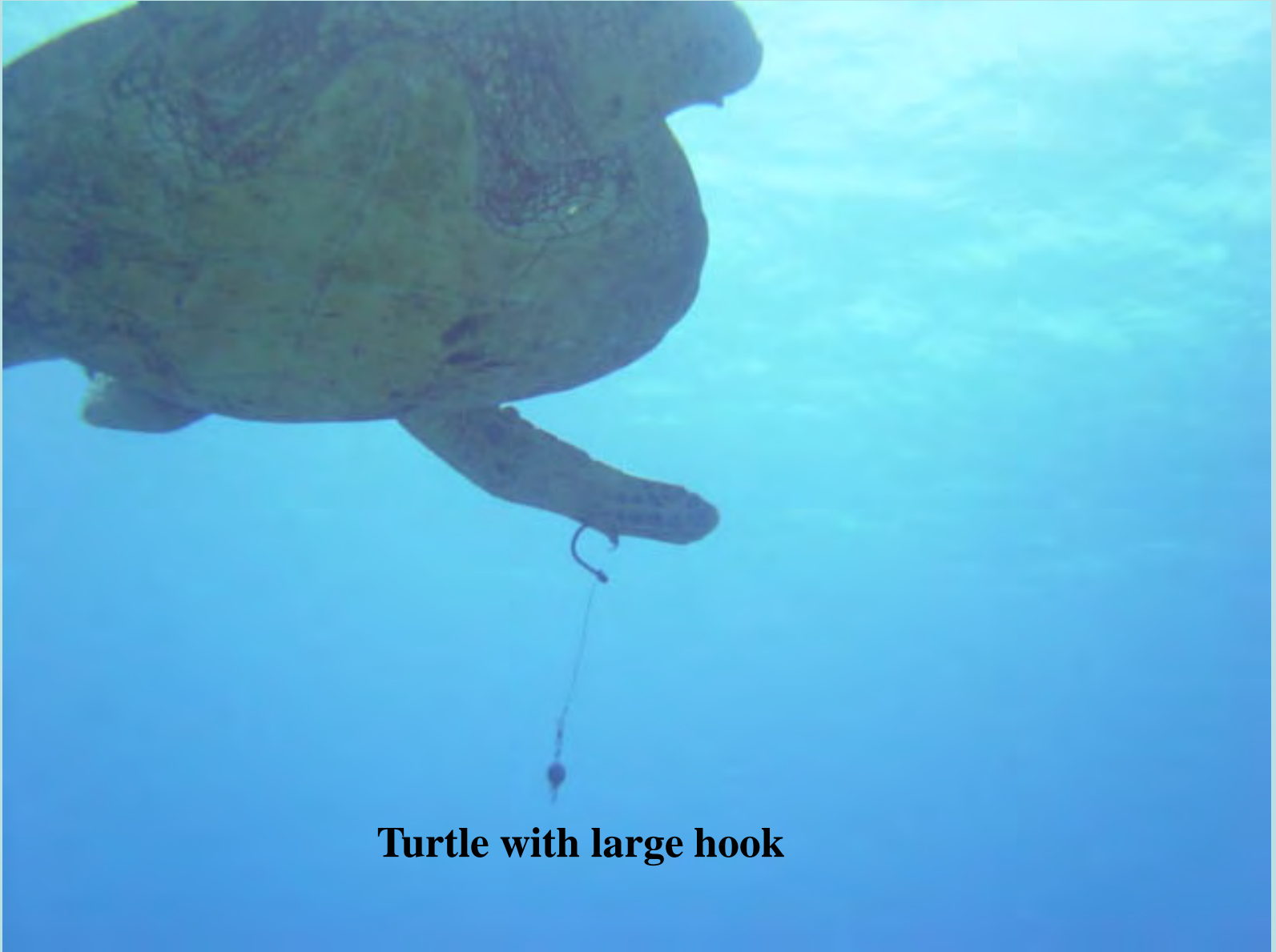
MONOFILAMENT LINE

HOOKS





INGESTED MONO FISHLINE



Turtle with large hook



**BEFORE ATTEMPTING LINE REMOVAL-- CUT LINE
SHORT OR X-RAY FOR HOOKS**



Ingested line-if no hooks are present, many times it may be removed by gentle traction



HOOK WITH MONO LINE



HOOK ENTRIES LIKE THIS MUST BE REMOVED BY SURGERY

A LOCAL ANESTHETIC IS INJECTED AROUND THE SITE



Monofilament line around flipper and down the throat



Deep cuts through the muscle are common



EVIDENCE OF NECK ENTANGLEMENT



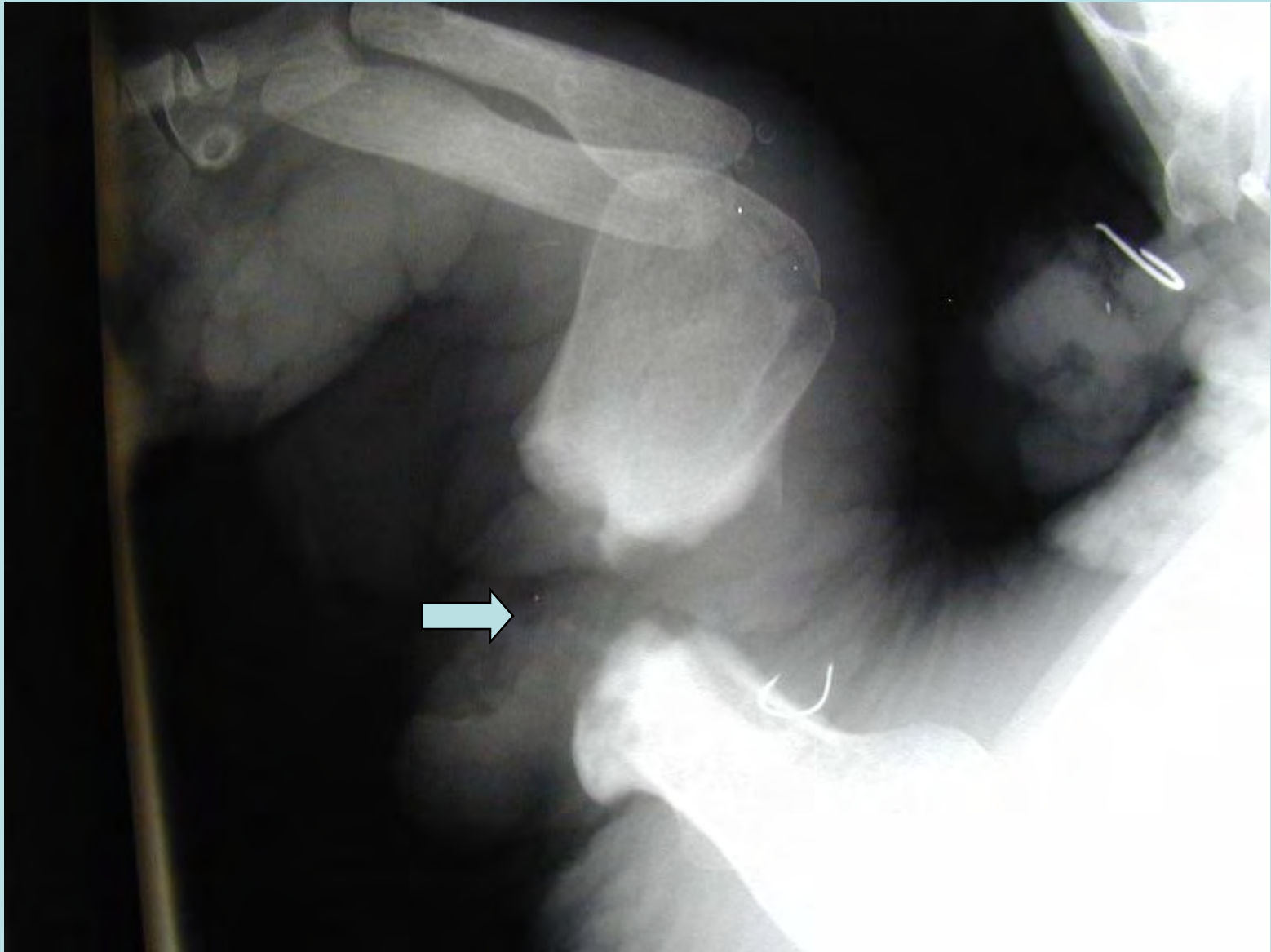
**A SEVERE CASE OF ENTANGLEMENT RESULTING IN A
NECROTIC FLIPPER**



**ANOTHER CASE OF LINE STRANGULATION-AMPUTATION
IS THE ONLY TREATMENT**



RADIOGRAPH SHOWING HOW LINE CONSTRICTION CAN CAUSE BONE NECROSIS AND FRACTURES



**RADIOGRAPH OF BONE FRACTURE FROM LINE
ENTANGLEMENT**

CRITERIA USED TO TO DETERMINE IF EUTHANASIA IS THE ONLY CHOICE

HISTORY (REPEAT STRANDER) ?

PCV AND TP VALUES

LOCATION AND SIZE OF TUMORS

BODY CONDITION

ACTIVITY LEVEL OF TURTLE

**CONFIRMATION OF DECISION BY ROBERT MORRIS
GEORGE BALAZS AND THIERRY WORK**

SURGERY

ANESTHESIA





GAS ANESTHESIC: I USE SEVOFLURANE FOR SHORTER RECOVERY PERIOD BUT IS EXPENSIVE



DOPPLER FOR MONITORING HEART RATE



READY FOR SURGERY



SURGICAL REMOVAL OF HUMERUS AT JOINT



COMPLETED SURGERY



READY TO GO



RELEASE TIME



MASSIVE JAW TUMOR



AFTER SURGERY

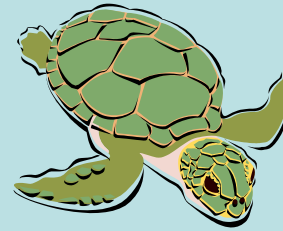
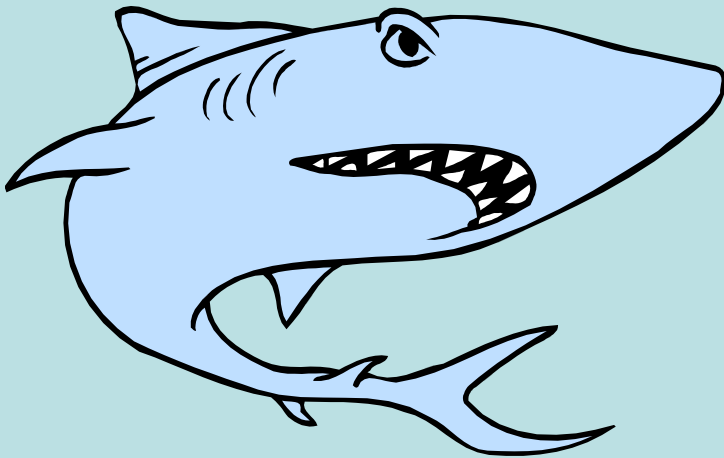


CRYOSURGERY WITH
LIQUID NITROGEN



USUALLY DO THREE FREEZE THAW CYCLES

SHARK ATTACKS





FATAL SHARK BITES



FATAL SHARK ATTACK



REAR FLIPPER SHARK BITE



LOGGERHEAD WITH SHARK INJURIES

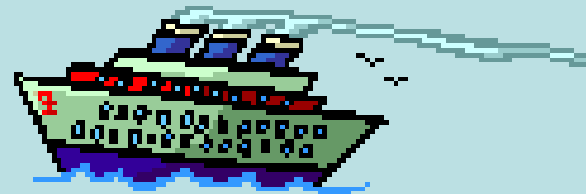


LOGGERHEAD INJURIES



**RELEASE OF SAME LOGGERHEAD AFTER
SEVERAL MONTHS OF REHAB**

BOAT STRIKES





FATAL BOAT STRIKE



GREEN TURTLE WITH BOAT INJURIES



CLOSE UP OF SHELL DAMAGE



DENTAL ACRYLIC FOR SHELL REPAIR



**A TWO-PART APPLICATION-POWDER APPLIED FIRST, THEN
LIQUID ACTIVATOR**



FINISHED REPAIR



**SPLIT SHELL FROM BOAT-WIRES APPLIED TO
PULL SPLIT TOGETHER**



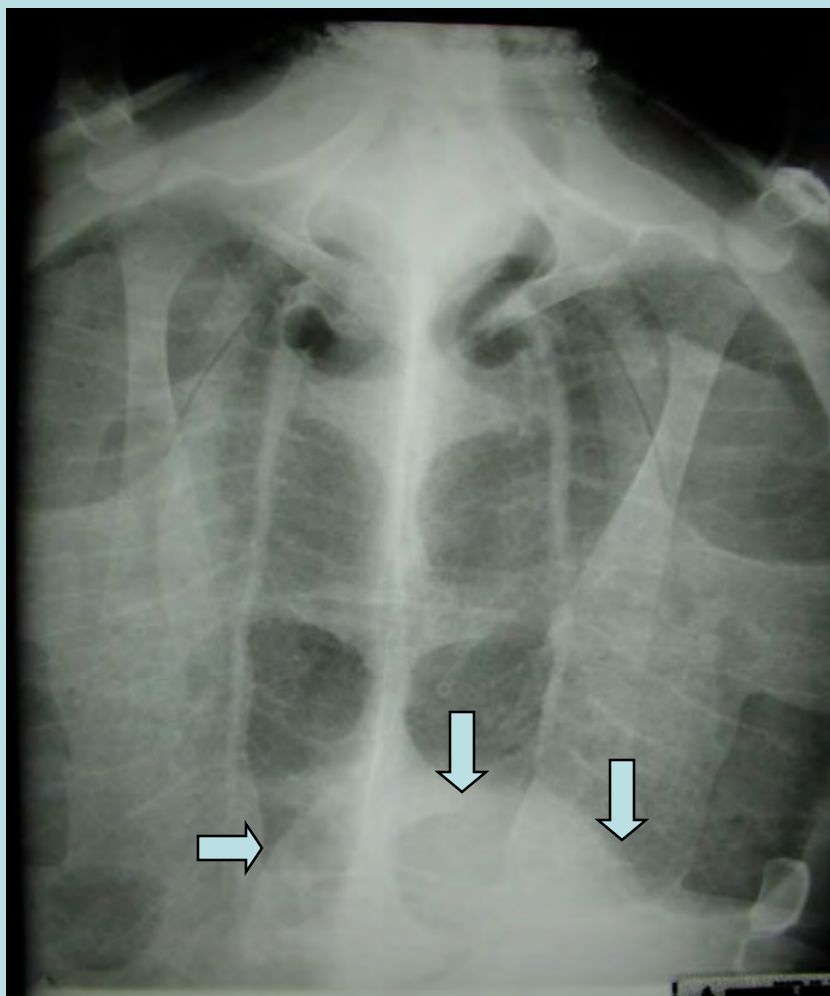
REPAIR COMPLETE AFTER DENTAL ACRYLIC APPLIED



**VISUAL EVIDENCE SUGGESTING THESE
TURTLES CANNOT SUBMERGE**



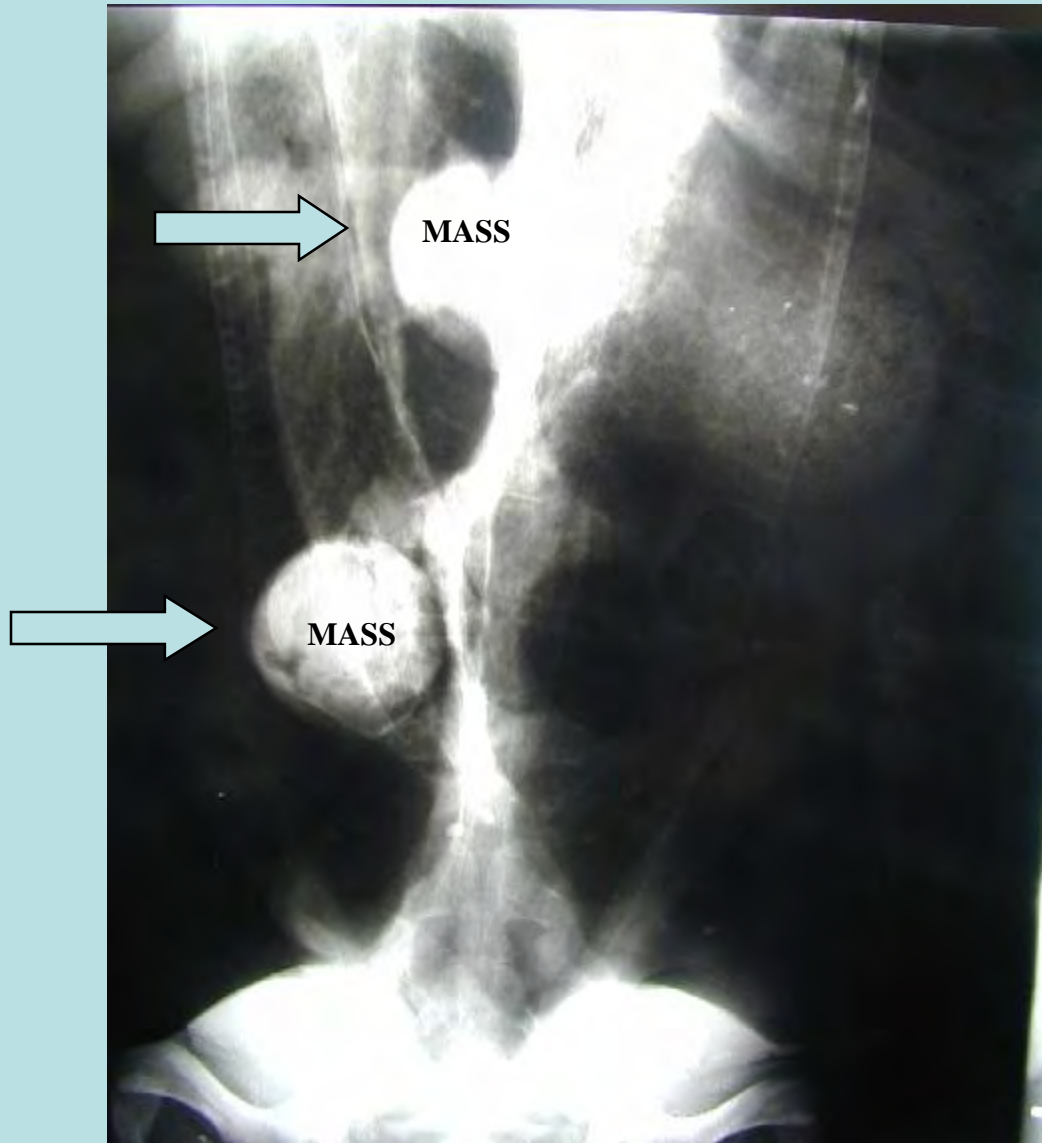
HAWKSBILL WITH BOUYANCY PROBLEM



**X-RAY REVEAL SOFT TISSUE MASS IN
POSTERIOR ABDOMEN**



**NECROPSY BY DR WORK REVEALED
LARGE RENAL TUMOR**



**X-RAY OF TURTLE SHOWING SEVERAL
ABNORMAL DENSITIES**



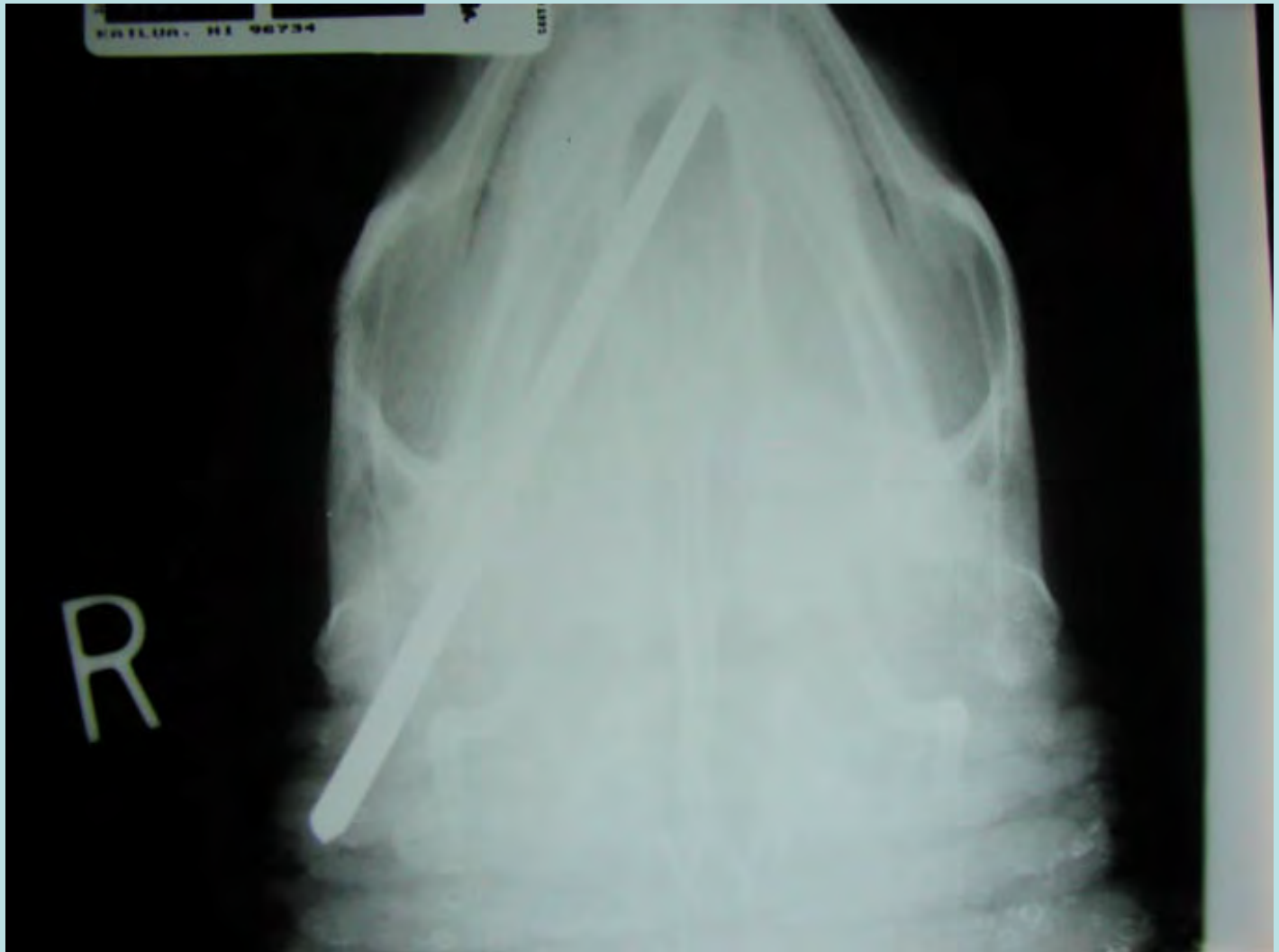
NECROPSY REVEALS LUNG TUMORS



TURTLE WITH SPEAR IN HEAD



SPEAR ENTRY



X-RAY OF SPEAR DORSAL VIEW



LATERAL VIEW-SPEAR HAD PINNED LOWER JAW SHUT



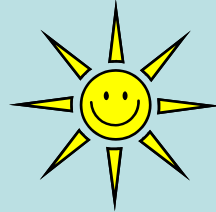
REMOVAL WITH PIN DRIVER



**SUCCESSFUL REMOVAL AND TURTLE WAS TREATED
AND RELEASED**



THE GOOD NEWS



THE NUMBERS OF TURTLES HAVE BEEN INCREASING

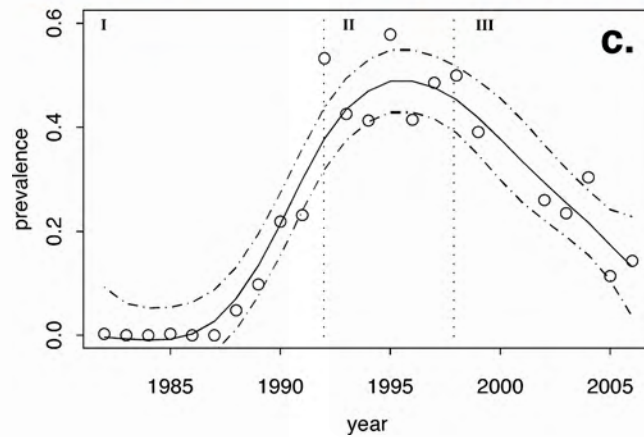
THE INCIDENCE OF FIBROPAPILLOMA IN SOME
AREAS IS DECREASING



1993



2004



Rise and fall of a 25-year marine cancer epizootic



THE FUN PART OF THE JOB--RELEASE



A HAPPY TURTLE





