

2003 KIHOLA, KALOKO,  
PUAKO & WAIKOLOA

G.H. BALAZS

3 of 3

BALAZS

Kiholo 1-21-03  
KALOKO 1-22-03 **alco**® Puako 3-4-03  
KOOKSIE & TIM

**Composition Book**

KIHOLA 3-5-03 BASKERS

Name \_\_\_\_\_

School KIHOLA 7-9-03 / 7/10/03  
WEDNESDAY WAIKOA / KAHOLA B.P.

Grade KIHOLA K. AETIVE 8/14/03

Wide Ruled WAIKOLOA 10/6/03 CHU

9 3/4 x 7 1/2 in. 100 Sheets  
(24.76 x 19.05 cm)

(808) 286-2899  
GEORGE BALAZS  
Marine Turtle Research  
NMFS HONOLULU LAB  
2570 Dole Street  
Honolulu, HI 96822-2396

135

Revised 04/04/01

START  
WAIKOLOA

NMFS, HONOLULU LAB  
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#1

SEA TURTLE TAGGING FORM

DATE FORM FILLED OUT / /

CAPTURE DATE, LOCATION AND METHOD:

10/6/03 WAIKOLOA (hand snorkel)  
PERSON RECORDING DATA: Chui Ling Cheng

TUMOR SCORE

0

ORAL TMRS EXT:  
YES OR NO

—

EMACIATION CODE

0

OLD TAGS:

424F071B0D  
423F431C61

NEW TAGS:

RFL  
LFL

STRAIGHT CARAPACE - LENGTH:

64.0 cm

WIDTH: 53.3 cm

NOTCH LENGTH:

63.9 cm

DB: 0 L.O.

VB: 0 L.O.

CURVED CARAPACE LENGTH: ~

69.5 cm

WIDTH: 64.5 cm

HEAD WIDTH:

9.6 cm

AXIAL: 27.9 cm

LATERAL: 27.9 cm

PPS: YES OR NO OR NE

—

SEX: Male, Female  
or Undetermined

U

TAIL LENGTH: T

14.5 cm

C 9.0 cm

RIGHT FRONT FLIPPER WIDTH:

10.3 cm

SAMPLES COLLECTED:

PLASTRON LENGTH:

51.3 cm

WEIGHT:

96 #

DESCRIPTIVE REMARKS:

[Empty box for descriptive remarks]

Glucose

GMB 50

MR 55

neck puncture  
Blood draw

#2

SEA TURTLE TAGGING FORM

DATE FORM FILLED OUT 10/6/03

CAPTURE DATE, LOCATION AND METHOD:

WAIKOLOA -- HAND SNORKEL 10/6/03  
PERSON RECORDING DATA: Chui ling Cheng

TUMOR SCORE

0

ORAL TMRS EXT:  
YES OR NO

-

EMACIATION CODE

0

OLD TAGS:

424E193E03  
423F332C06  
221A405B13

NEW TAGS:

RFL  
LFL

STRAIGHT CARAPACE - LENGTH:

68.0 cm

WIDTH:

53.9 cm

NOTCH LENGTH:

67.1 cm

DB:

Q L.O.

VB:

0 L.O.

CURVED CARAPACE LENGTH:

74 cm

WIDTH:

64 cm

HEAD WIDTH:

9.8 cm

AXIAL:

26.2 cm

LATERAL:

25.9 cm

PPS: YES OR NO OR NE

-

SEX: Male, Female  
or Undetermined

U

TAIL LENGTH: T

14 cm

C

9.5 cm

SAMPLES COLLECTED:

RIGHT FRONT FLIPPER WIDTH:

10.6 cm

PLASTRON LENGTH:

53.9 cm

WEIGHT:

88 #

DESCRIPTIVE REMARKS:

[Empty box for descriptive remarks]

Glucose / GHB 23  
MR 59 53 neck DRAW

SEA TURTLE TAGGING FORM

#3

DATE FORM FILLED OUT / /

CAPTURE DATE, LOCATION AND METHOD:

10/6/03 waikoloa -- Hand Snorkel  
PERSON RECORDING DATA: Chui Ling Cheng

TUMOR SCORE

0

ORAL TMRS EXT:  
YES OR NO

—

EMACIATION CODE

0

OLD TAGS:

44131C5069  
4414627652

NEW TAGS:

RFL  
LFL

STRAIGHT CARAPACE - LENGTH:

61.8 cm

WIDTH: 48.0 cm

NOTCH LENGTH: 61.4 cm

DB: 0 L.O.

VB: 0 L.O.

CURVED CARAPACE LENGTH:

67.5 cm

WIDTH: 58.0 cm

HEAD WIDTH: 9.1 cm

AXIAL: 27.9 cm

LATERAL: 27.5 cm

PPS: YES OR NO OR NE —

SEX: Male, Female or Undetermined U

TAIL LENGTH: T — cm

C — cm

RIGHT FRONT FLIPPER WIDTH: 10.6 cm

SAMPLES COLLECTED:  
mouth sample collected

PLASTRON LENGTH: 49.8 cm

WEIGHT: 80 #

DESCRIPTIVE REMARKS:

Glucose

GHB 54

MR 558

neck DRAW

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#4

SEA TURTLE TAGGING FORM

DATE FORM FILLED OUT / /

CAPTURE DATE, LOCATION AND METHOD:

10/6/03 WAIKOLOA -- HAND SNORKEL  
PERSON RECORDING DATA: Chui ling Cheng (鄭翠翎)

TUMOR SCORE

0

ORAL TMRS EXT:

YES OR NO

—

EMACIATION CODE

0

OLD TAGS:

424E153113  
4135147C7D

NEW TAGS:

RFL  
-LFL

STRAIGHT CARAPACE - LENGTH:

63.3 cm

WIDTH: 47.9 cm

NOTCH LENGTH: 63.2 cm

DB: 0 L.O.

VB: 0 L.O.

CURVED CARAPACE LENGTH:

68 cm

WIDTH: 60 cm

HEAD WIDTH: 9.8 cm

AXIAL: 26.9 cm

LATERAL: 27.1 cm

PPS: YES OR NO OR NE

—

SEX: Male, Female or Undetermined

U

TAIL LENGTH: T 13 cm

C 8.5 cm

RIGHT FRONT FLIPPER WIDTH:

9.9 cm

SAMPLES COLLECTED:

BLOOD FOR DNA = VIAL #

PLASTRON LENGTH: 49.6 cm

WEIGHT: 78 #

DESCRIPTIVE REMARKS:

GLUCOSE GHB 46 MR 52 neck DRAW

#5

SEA TURTLE TAGGING FORM

DATE FORM FILLED OUT / /

CAPTURE DATE, LOCATION AND METHOD:

10/6/03 WAIKOLOA -- HAND SNORKEL  
PERSON RECORDING DATA: Chui Ling Cheng

TUMOR SCORE

0

ORAL TMRS EXT:  
YES OR NO

—

EMACIATION CODE

0

OLD TAGS:

Empty boxes for old tags

NEW TAGS:

RF 44546B7B37  
LFL [Barcode]  
RH 443A270053 [Barcode]

STRAIGHT CARAPACE - LENGTH:

49.8 cm

WIDTH: 40.1 cm

NOTCH LENGTH: 49.5 cm

DB: 0 L.O.

VB: 0 L.O.

CURVED CARAPACE LENGTH:-

54 cm

WIDTH: 47 cm

HEAD WIDTH: 7.7 cm

AXIAL: 19.6 cm

LATERAL: 19.8 cm

PPS: YES OR NO OR NE

—

SEX: Male, Female  
or Undetermined

U

TAIL LENGTH: T 11 cm

C 7.5 cm

RIGHT FRONT FLIPPER WIDTH:

8.9 cm

SAMPLES COLLECTED:  
Blood sample #  
DNA = vial 2

PLASTRON LENGTH: 40.2 cm

WEIGHT: 39 #

DESCRIPTIVE REMARKS:

Empty box for descriptive remarks

NECK { GHB = 59 neck Glucose  
MR = 62 neck

GHB = 59 neck  
MR = hind flipper blood 61

#6

SEA TURTLE TAGGING FORM

DATE FORM FILLED OUT / /

CAPTURE DATE, LOCATION AND METHOD:

10/6/03 WAIKOLOA -- HAND SNORKEL  
PERSON RECORDING DATA: Chui Ling Cheng

TUMOR SCORE

0

ORAL TMRS EXT:  
YES OR NO

—

EMACIATION CODE

0

OLD TAGS:

(RH)  
H123 = metal tag  
H121 = (LF)  
502F057809  
221A720301

NEW TAGS:

RFL: H 4452713765  
LFL: [Barcode]

STRAIGHT CARAPACE - LENGTH:

68.9 cm

WIDTH: 52.4 cm

NOTCH LENGTH:

67.6 cm

DB: 0 L.O.

VB: 0 L.O.

CURVED CARAPACE LENGTH:

73.5 cm

WIDTH: 66.5 cm

HEAD WIDTH:

10.9 cm

AXIAL: 28.4 cm

LATERAL: 27.5 cm

PPS: YES OR NO OR NE

—

SEX: Male, Female  
or Undetermined

J

TAIL LENGTH: T

11.5 cm

C 8 cm

RIGHT FRONT FLIPPER WIDTH:

11.7 cm

SAMPLES COLLECTED:

Blood sample  
DNA = vial 3  
#

PLASTRON LENGTH:

57.2 cm

WEIGHT:

105 #

DESCRIPTIVE REMARKS:

Burrowing  
skin  
Barnacle clusters  
on plastron

NECK DRAW

GLUCOSE

GHB 53

MR 60

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SEA TURTLE TAGGING FORM

*Need*  
Mikaela Heidi DeFlorio  
20 Easthampton Rd Apt L  
HOLYOKE, MA 01040  
mdefloria@juno.com  
Thank You!!  
*Ly*

*#7*

DATE FORM FILLED OUT / /

CAPTURE DATE, LOCATION AND METHOD:

10/6/03 WAIKOLOA -- HAND snorkel  
PERSON RECORDING DATA: Chui Ling Cheng

TUMOR SCORE

ORAL TMRS EXT:  
YES OR NO

EMACIATION CODE

OLD TAGS:

V820 = RF

V822 = RH

NEW TAGS:

RFB   
LFL

RH

STRAIGHT CARAPACE - LENGTH:

cm

WIDTH:  cm

NOTCH LENGTH:  cm

DB:  L.O.

VB:  L.O.

CURVED CARAPACE LENGTH:

cm

WIDTH:  cm

HEAD WIDTH:  cm

AXIAL:  cm

LATERAL:  cm

PPS: YES OR NO OR NE

SEX: Male, Female or Undetermined

TAIL LENGTH: T  cm

C  cm

RIGHT FRONT FLIPPER WIDTH:

cm

SAMPLES COLLECTED:

DNA = vial 4

Blood #

PLASTRON LENGTH:  cm

WEIGHT:  #

DESCRIPTIVE REMARKS:

*Picture of Heidi and Mike married one week ago.*

GHB 51 neck  
MR 52 (neck)



#8

SEA TURTLE TAGGING FORM

DATE FORM FILLED OUT / /

CAPTURE DATE, LOCATION AND METHOD:

10/6/03 WAIKOLUA -- Hand  
PERSON RECORDING DATA: Chiu Ling Cheng Snorkel

TUMOR SCORE

0

ORAL TMRS EXT:

YES OR NO

—

EMACIATION CODE

0

OLD TAGS:

413E40374D  
424F246731

NEW TAGS:

RFL  
LEL

STRAIGHT CARAPACE - LENGTH:

57.8 cm

WIDTH: 44.0 cm

NOTCH LENGTH:

57.1 cm

DB: 0 L.O.

VB: 0 L.O.

CURVED CARAPACE LENGTH:

62 cm

WIDTH: 53.5 cm

HEAD WIDTH:

8.7 cm

AXIAL: 24.9 cm

LATERAL: 24.2 cm

PPS: YES OR NO OR NE

—

SEX: Male, Female or Undetermined

U

TAIL LENGTH: T

12.5 cm

C 8 cm

RIGHT FRONT FLIPPER WIDTH:

— cm

SAMPLES COLLECTED:

Blood DNA = vials

PLASTRON LENGTH:

47.1 cm

WEIGHT:

62 #

DESCRIPTIVE REMARKS:

[Empty box for descriptive remarks]

(red filaments in mouth.)  
not saved

[Glucose]

GHB

49

neck Blood

MR

67

(neck)

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SEA TURTLE TAGGING FORM

DATE FORM FILLED OUT / /

CAPTURE DATE, LOCATION AND METHOD:

10/6/03 WAIKOLOA -- ~~Waikoloa~~ net  
PERSON RECORDING DATA: Chui Ling Cheng ~~Schiffel~~

TUMOR SCORE

0

ORAL TMRS EXT:

YES OR NO

—

EMACIATION CODE

0

OLD TAGS:

4413104207  
44140E333F

NEW TAGS:

RFL

LFL

STRAIGHT CARAPACE - LENGTH:

48.9 cm

WIDTH:

40.4 cm

NOTCH LENGTH:

48.6 cm

DB:

0 L.O.

VB:

0 L.O.

CURVED CARAPACE LENGTH:

52.0 cm

WIDTH:

48.0 cm

HEAD WIDTH:

7.7 cm

AXIAL:

19.9 cm

LATERAL:

19.2 cm

PPS: YES OR NO OR NE

~

SEX: Male, Female  
or Undetermined

U

TAIL LENGTH: T

9 cm

C

5.5 cm

RIGHT FRONT FLIPPER WIDTH:

— cm

SAMPLES COLLECTED:

Blood DNA = vial 6

PLASTRON LENGTH:

40.6 cm

WEIGHT:

38 #

DESCRIPTIVE REMARKS:

[Redacted]

Blood (neck)

Glucose

GMB 53

MIR 54

#10

SEA TURTLE TAGGING FORM

DATE FORM FILLED OUT / /

CAPTURE DATE, LOCATION AND METHOD:

10/6/03 WAIKOLOA -- hand snorkel  
 PERSON RECORDING DATA: Chui Ling

TUMOR SCORE

0

ORAL TMRS EXT:

YES OR NO

—

EMACIATION CODE

0

OLD TAGS:

V824 = LF  
 V823 = RF  
 H117 = LH  
 V825 = RH  
 4413304E4C  
 4413370E4A

NEW TAGS:

RFL  
 LFL

STRAIGHT CARAPACE - LENGTH:

65.4 cm

WIDTH: 52.7 cm

NOTCH LENGTH: 64.5 cm

DB: 0 L.O.

VB: 0 L.O.

CURVED CARAPACE LENGTH:

70 cm

WIDTH: 64 cm

HEAD WIDTH: 10.0 cm

AXIAL: 28.4 cm

LATERAL: 27.8 cm

PPS: YES OR NO OR NE

—

SEX: Male, Female or Undetermined

U

TAIL LENGTH: T 15. cm

C 10 cm

RIGHT FRONT FLIPPER WIDTH:

— cm

SAMPLES COLLECTED:

PLASTRON LENGTH: 55.0 cm

Blood DNA = vial # 7

WEIGHT:

~~98.75~~ #

98 lbs

DESCRIPTIVE REMARKS:

1 filament of red algae from mouth NOT saved

Glucose GMB 51

MR 66

Blood (neck)

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SEA TURTLE TAGGING FORM

#11

DATE FORM FILLED OUT / /

CAPTURE DATE, LOCATION AND METHOD:

10/6/03 WAIKOLOA -- hand snorkel  
PERSON RECORDING DATA: Chui Ung Cheng

TUMOR SCORE

0

ORAL TMRS EXT:  
YES OR NO

—

EMACIATION CODE

0

OLD TAGS:

4421674B25  
22100B3B1E  
4413337D55  
V694 = LF  
tag lost = RF

NEW TAGS:

RFL  
LFL

STRAIGHT CARAPACE - LENGTH:

66.4 cm

WIDTH: 49.4 cm

NOTCH LENGTH: 66.1 cm

DB: 0 L.O.

VB: 0 L.O.

CURVED CARAPACE LENGTH:

71 cm

WIDTH: 62 cm

HEAD WIDTH: 9.8 cm

AXIAL: 27.9 cm

LATERAL: 27.9 cm

PPS: YES OR NO OR NE —

SEX: Male, Female or Undetermined U

TAIL LENGTH: T 13 cm

C 8 cm

RIGHT FRONT FLIPPER WIDTH:

— cm

SAMPLES COLLECTED:  
blood DNA = vial 8

PLASTRON LENGTH: 55.0 cm

WEIGHT: 90 #

DESCRIPTIVE REMARKS:

[ ]

(week) Glucose GHB  
MR 67

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1746

# 12

SEA TURTLE TAGGING FORM

DATE FORM FILLED OUT / /

CAPTURE DATE, LOCATION AND METHOD:

10/6/03	WAIKOLOA	net
PERSON RECORDING DATA: <u>ELC</u>		

TUMOR SCORE

ORAL TMRS EXT:  
YES OR NO

EMACIATION CODE

OLD TAGS:

423F324C68
220E060D05
V695 = RF <sub>2</sub>
tag lost = LF

(hole healed)

NEW TAGS:

RF1	4452507E7A
LFL	

STRAIGHT CARAPACE - LENGTH:

52.3 cm

WIDTH: 41.8 cm

NOTCH LENGTH: 51.9 cm

DB:  L.O.

VB:  L.O.

CURVED CARAPACE LENGTH: 56 cm

WIDTH: 50 cm

HEAD WIDTH: 8.2 cm

AXIAL: 21.2 cm

LATERAL: 20.8 cm

PPS: YES OR NO OR NE

SEX: Male, Female or Undetermined  U

TAIL LENGTH: T 11.5 cm

C 8.5 cm

RIGHT FRONT FLIPPER WIDTH:  cm

SAMPLES COLLECTED:

Blood	DNA = vial 9
	#

PLASTRON LENGTH: 41.4 cm

WEIGHT: 45 #

DESCRIPTIVE REMARKS:

(neck) glucose GHB 0 MR 60

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#13

SEA TURTLE TAGGING FORM

DATE FORM FILLED OUT / /

CAPTURE DATE, LOCATION AND METHOD:

10/6/03	WAIKOLOA HILTON	Hand Snorkel
PERSON RECORDING DATA: Carlyn Ungi		

TUMOR SCORE

0

ORAL TMRS EXT:  
YES OR NO

—

EMACIATION CODE

0

OLD TAGS:

407D327C32
42500C5B33
441311020
Q778

NEW TAGS:

RFL
LFL

STRAIGHT CARAPACE - LENGTH:

65.7 cm

WIDTH:

63.2 cm

NOTCH LENGTH:

65.4 cm

DB:

0 L.O.

VB:

0 L.O.

CURVED CARAPACE LENGTH:

71.5 cm

WIDTH:

65.5 cm

HEAD WIDTH:

9.6 cm

AXIAL:

27.9 cm

LATERAL:

28.3 cm

PPS: YES OR NO OR NE

—

SEX: Male, Female  
or Undetermined

U

TAIL LENGTH: T

12.5 cm

C

8.5 cm

SAMPLES COLLECTED:

Mouth Sample Collected

RIGHT FRONT FLIPPER WIDTH:

— cm

PLASTRON LENGTH:

51.2 cm

WEIGHT:

96 lbs #

Blood for DNA vial #10

DESCRIPTIVE REMARKS:

~~Mouth Sample Collected~~

Blood (Neck)

Glucose

GAB 56  
MR 57

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SEA TURTLE TAGGING FORM

#14

DATE FORM FILLED OUT / /

CAPTURE DATE, LOCATION AND METHOD:

10/6/03 Waikoloa  
 PERSON RECORDING DATA: Caryn Unger  
 Hands  
 Spurkel

TUMOR SCORE

0

ORAL TMRS EXT:  
YES OR NO

—

EMACIATION CODE

0

OLD TAGS:

424F24403P  
 423F464101

NEW TAGS:

RFL  
 LFL

STRAIGHT CARAPACE - LENGTH:

69.2 cm

WIDTH: 54.8 cm

NOTCH LENGTH: 68.4 cm

DB: L.O.

VB: L.O.

CURVED CARAPACE LENGTH:

74.5 cm

WIDTH: 68.0 cm

HEAD WIDTH: 10.3 cm

AXIAL: 30.9 cm

LATERAL: 30.8 cm

PPS: YES OR NO OR NE —

SEX: Male, Female or Undetermined U

TAIL LENGTH: T 17 cm

C 11 cm

RIGHT FRONT FLIPPER WIDTH: — cm

SAMPLES COLLECTED: Mouth Sample collected

PLASTRON LENGTH: 56.1 cm

Blood DNA - Lial 11

WEIGHT: 112 lbs #

DESCRIPTIVE REMARKS:

Blood (Neck) Glucose - GHB 52  
 MR 59

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#15

SEA TURTLE TAGGING FORM

DATE FORM FILLED OUT / /

CAPTURE DATE, LOCATION AND METHOD:

10/6/03	Waikoloa	Hand Snorkel
PERSON RECORDING DATA: <u>Carlynn Unzger</u>		

TUMOR SCORE

ORAL TMRS EXT:  
YES OR NO

EMACIATION CODE

OLD TAGS:

413629265B
407C7714#F
Q784 = RF
Q786 = LF

NEW TAGS:

RFL: 44520F680F
LFL: 
Right Hind <sup>↑</sup>

STRAIGHT CARAPACE - LENGTH:

cm

WIDTH:  cm

NOTCH LENGTH:

cm

DB:  L.O.

VB:  L.O.

CURVED CARAPACE LENGTH:

cm

WIDTH:  cm

HEAD WIDTH:

cm

AXIAL:  cm

LATERAL:  cm

PPS: YES OR NO OR NE

SEX: Male, Female  
or Undetermined

TAIL LENGTH: T

cm

C  cm

RIGHT FRONT FLIPPER WIDTH:

cm

SAMPLES COLLECTED:

PLASTRON LENGTH:

cm

Blood	<del>Heart</del>
DNA-Vial #12	

WEIGHT:

#

DESCRIPTIVE REMARKS:

Filaments  
of Red Algae  
in mouth

Glucose

~~GHR~~ ~~ERR~~

MR 56

Neck Blood



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150

# 16

SEA TURTLE TAGGING FORM

DATE FORM FILLED OUT / /

CAPTURE DATE, LOCATION AND METHOD:

10/6/03 Waikoloa

PERSON RECORDING DATA: *Carlyn Unreger*

*Hand  
Snorkel*

TUMOR SCORE

0

ORAL TMRS EXT:

YES OR NO

—

EMACIATION CODE

0

OLD TAGS:

413517410C  
~~407C7A4578~~  
407C7A4578  
U698

NEW TAGS:

RFL 44517C6D4C  
LFL   
Right Hind <sup>9</sup>

STRAIGHT CARAPACE - LENGTH:

73.2 cm

WIDTH: 56.7 cm

NOTCH LENGTH: 72.6 cm

DB: 0 L.O.

VB: 0 L.O.

CURVED CARAPACE LENGTH:

79.0 cm

WIDTH: 71.5 cm

HEAD WIDTH: 10.4 cm

AXIAL: 32.5 cm

LATERAL: 32.6 cm

PPS: YES OR NO OR NE —

SEX: Male, Female or Undetermined

U

TAIL LENGTH: T 18.5 cm

C 13.5 cm

RIGHT FRONT FLIPPER WIDTH:

— cm

SAMPLES COLLECTED:

Blood DNA - Vail #13

PLASTRON LENGTH: 56.7 cm

WEIGHT: 135 #

DESCRIPTIVE REMARKS:

*Neck Blood*

Glucose GHB —  
MR 59

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SEA TURTLE TAGGING FORM

DATE FORM FILLED OUT / /

CAPTURE DATE, LOCATION AND METHOD:

10/6/03 Waikoloa Hand  
 PERSON RECORDING DATA: Carolyn Wenger Smokey

N=17  
END  
WAIKOLOA  
10/6/03

TUMOR SCORE

0

ORAL TMRS EXT:  
YES OR NO

—

EMACIATION CODE

0

OLD TAGS:

4135767809  
 4135226B1E  
 R487=RF

NEW TAGS:

RFL  
 LFL

STRAIGHT CARAPACE - LENGTH:

63.2 cm

WIDTH: 49.7 cm

NOTCH LENGTH: 62.7 cm

DB: 0 L.O.

VB: 0 L.O.

CURVED CARAPACE LENGTH:

69.0 cm

WIDTH: 63.0 cm

HEAD WIDTH: 9.4 cm

AXIAL: 26.0 cm

LATERAL: 26.2 cm

PPS: YES OR NO OR NE —

SEX: Male, Female or Undetermined 0

TAIL LENGTH: T 11.5 cm

C 7.0 cm

RIGHT FRONT FLIPPER WIDTH: — cm

SAMPLES COLLECTED:  
Blood  
DNA - Vert 14

PLASTRON LENGTH: 51.0 cm

WEIGHT: 81 #

DESCRIPTIVE REMARKS:

Glucose GAB 47 Neck  
MR 63 Draw

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SEA TURTLE TAGGING FORM

DATE FORM FILLED OUT / /

CAPTURE DATE, LOCATION AND METHOD:

[Empty box for capture date, location and method]

PERSON RECORDING DATA:

TUMOR SCORE

[Empty box for tumor score]

ORAL TMRS EXT:  
YES OR NO

[Empty box for oral tumor score]

EMACIATION CODE

[Empty box for emaciation code]

OLD TAGS:

[Empty box for old tags]

NEW TAGS:

RFL

[Empty box for RFL tag]

LFL

[Empty box for LFL tag]

[Empty box for tag]

[Empty box for tag]

[Empty box for tag]

STRAIGHT CARAPACE - LENGTH:

[Empty box for straight carapace length] cm

WIDTH:

[Empty box for width] cm

NOTCH LENGTH:

[Empty box for notch length] cm

DB:

[Empty box for DB] L.O.

VB:

[Empty box for VB] L.O.

CURVED CARAPACE LENGTH:

[Empty box for curved carapace length] cm

WIDTH:

[Empty box for width] cm

HEAD WIDTH:

[Empty box for head width] cm

AXIAL:

[Empty box for axial] cm

LATERAL:

[Empty box for lateral] cm

PPS: YES OR NO OR NE

[Empty box for PPS]

SEX: Male, Female  
or Undetermined

[Empty box for sex]

TAIL LENGTH: T

[Empty box for tail length] cm

C

[Empty box for C] cm

SAMPLES COLLECTED:

RIGHT FRONT FLIPPER WIDTH:

[Empty box for right front flipper width] cm

PLASTRON LENGTH:

[Empty box for plastron length] cm





WEIGHT:

[Empty box for weight] #

DESCRIPTIVE REMARKS:

[Empty box for descriptive remarks]

RAPID Health Assessment II KITHOLO Bay July 9, 03


DATE	SN	OLD TAG	NEW TAG	NOTES
7/9/03	45.0 cm		 4352160723	All AWAY since Scoop net/net Kitholo Bay
7/9/03	67.9 cm	410B4A5B36		
7/9/03	54.9 cm	1F704DIA08A K419		*BIOPSY SAMPLE FROM CLOACAL OPENING
7/9/03	62.3 cm	K409		
7/9/03	46.4 cm	Q677	 435C2A7512	
7/9/03	47.5 cm		 4359481E10	
7/9/03	58.3 cm	H23	 4349634767	
7/9/03	48.5 cm	44117E6700		
7/9/03	62.6 cm	N532		
7/9/03	39.6 cm	435C1F0E24		
7/9/03	48.2 cm	41040B4510		
7/9/03	53.8 cm	411E7D7547		


Kiholo Bay  
July 9, 03


"Rapid Health Assessment"

ALL AWAY/SLICE  
Kiholo Bay  
scoop net/net 158

DATE SCL OLD TAG NEW TAG NOTES


7/9/03 (32) 64.6 cm 221A7B767F  43591E2F28

7/9/03 (33) 72.8 cm 7F7F51732E REAR (L)  43485C181C

7/9/03 (34) 52.4 cm B22A LH  435C3D374C

7/9/03 (35) 49.2 cm 4136200D3E/Q742

7/9/03 (36) 41.6 cm 41370B571C LH


7/9/03 (37) 55.3 cm LFF 2210662A7&A/H-221  43587A370E


7/9/03 (38) 43.6 cm LH 5019261516/RFL 4131

7/9/03 (39) 40.3 cm RH LH  435876043F  435B773A2D likely new recruit

7/9/03 (40) 49.4 40774C492D/4104124A7E4

7/9/03 (41) 54.5 none LH  43590D4963  435C334774 RH

7/9/03 (42) 46.4 V-6068 LH  434F4A163C

7/9/03 (43) 57.3 B-6068 4413201661 RH  436A01755F  
note tool (old)  
"V"

"Rapid Health Assessment"  
SCL Kiholo Bay July 9, 03

All Away since Kiholo Bay. Scoop net/net  
new tags notes

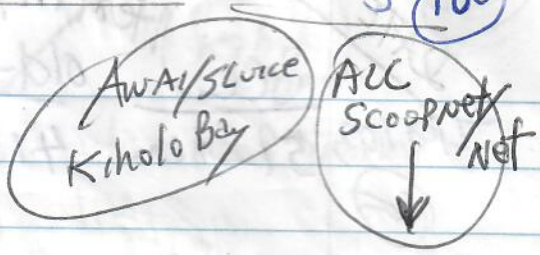
7/9/03 (44)	48.8 cm now	LH	436951783E	RH 434F441B7F
7/9/03 (45)	49.8 cm			
7/9/03 (46)	50.6 (blue plastic) 2-24/4-677	LH	4351113E57	RH 4352137874
7/9/03 (47)	44.8		LH 435879654E	RH 435C2A5D57
7/9/03 (48)	39.3/35.1 (estimated)(actual)		LH 44526C0115	(postcentral) but scute is broken off right RH is missing and healed
7/9/03 (49)	48.8 Q-278		LH 443A15161F	8 marginal (R) indentation
7/9/03 (450)	44.9		RH 4452361C29	
7/9/03 (451)	44.9		LH 443A104723	RH 44396F2C29
7/9/03 (51)	63.7 B-977			
7/9/03 (52)	53.2 now		LH 445212382B	RH 44545D2914
7/9/03 (53)	52.4 4150533812		LH 4454510433	
7/9/03 (54)	44.9 4413046050			
7/9/03 (55)	54.8 40773F593A/K2334			

Rapid  
Health Assessment II

KIHULO BAY JULY 9, 03  
old tags / new tags

notes (160)

7/9/03  
(56) 60.6 1F442E2B44  
~~1F442E2B44~~



7/9/03 46.2 42520B4E1C  
(57)

7/9/03 48.7 none  
(58)

CU445237164F 	RH4454663264 
------------------	------------------

7/9/03 54.0 407748701077H31  
(59)  
~~090063~~

7/9/03 49.6 none  
(60)

CU443A0E115A 	RH44540B4A1F 
------------------	------------------

7/9/03 46.0 none  
(61)

CU4452433D0B 	RH4452730468 
------------------	------------------

7/9/03 56.8 4413062D31 / 4414530977  
(62) SUBTOTAL

↑ All scoop net / wet lagoon

7/9/03 57.1 4104005A01  
(63)

hand swept Kiholo Lagoon ↓ hand swept Kiholo Lagoon

7/9/03 57.7 41040B2D2C  
(64)

hand swept Kiholo Lagoon

"Rapid Health Assessment"  
Kittolo Bay July 9, 03

All Kittolo Lagoon notes

DATE

SCC

old tags

new tags

hand - horny protrusion  
snorkel left shoulder  
- plastron is flat

7/9/03

59.7 cm

4136106E28

(65)

7/9/03

54.8 cm

44454764422



44452763134



(64)

Part of  
Hind right flipper  
Missing hcs  
Plastron looks a little flat  
hand snorkel

7/9/03

42.3 cm

444525D7D22



4443A072273



Hand snorkel

(63)

7/9/03

54.8 cm

4104073D09

hand snorkel

(68)

7/9/03

69.3 cm

1F4960595F

BASKER

(69)

7/9/03

51.2 cm

500F214757

hand snorkel

(70)

7/9/03

60.6 cm

8905 N730  
8906

Plastron A  
Hand snorkel  
little flat

(71)

7/9/03

42.7 cm

4452414851



44517F145E



hand snorkel

(72)

7/9/03

52.4

4100064030

H-295 Basking  
H-296

(73)



49.4  
" Rapid Health Assessment  
July 9, 03 Kihoko Bay

DATE SCL

TAGS

Arc  
Kihoko  
Lagoon

162

7/9/03 47.6 cm **4443A0B7635**  
(74)

Hand Sworkel

7/9/03 49.4 cm **44397C471D**  
(75)

Hand Sworkel

7/9/03 56.5 cm **500F2B1760**  
(76) K437, K438

Basking

7/9/03 53.0 cm K430, K431  
(77) K432 **4454710424**

Ridge + swollen  
around cloaca  
L.H. hand sworkel

7/9/03 55.9 cm **410B6F4D69N1691**  
(78)

basking

7/9/03 53.7 cm **4452407C22**  
(79)

basking

7/9/03 50.9 cm **44396F4F44**  
(80)

in shoreline  
hand sworkel

7/9/03 59.7 cm **1F605C2474**  
(81) N524 all rest of hind  
flipper is missing

hand sworkel  
in shoreline

7/9/03 80.4 Mototool  
(82) Q

basking

7/9/03 62.0 **422F175374**  
(83) +

basking

~~7/9/03~~ ~~83~~ bas 7 baskers 1 white  
look fine via MARC's binoculars  
no ID's not for TBPS

(163)

"Rapid Health Assessment" July 9, 03 Kntoco

Viewed by Marc Rice  
Binoculars - 10  
Turns seen

7/9/03 5 baskets one has a "0" motor top

no ID's 95 total NOT for DPS

(179)

10/6/03 Monday WAHOLOA

3rd Frisbee  
10/6/03

Ashley Sutton  
Alina Catellacci

Kulia Wooddell yay!!

Aimee Clark

Rachel Sullivan ~ Hatter ~

Camille Mori

Evan Moniz - Hole

Chui Ling Cheng (鄭翠翎)

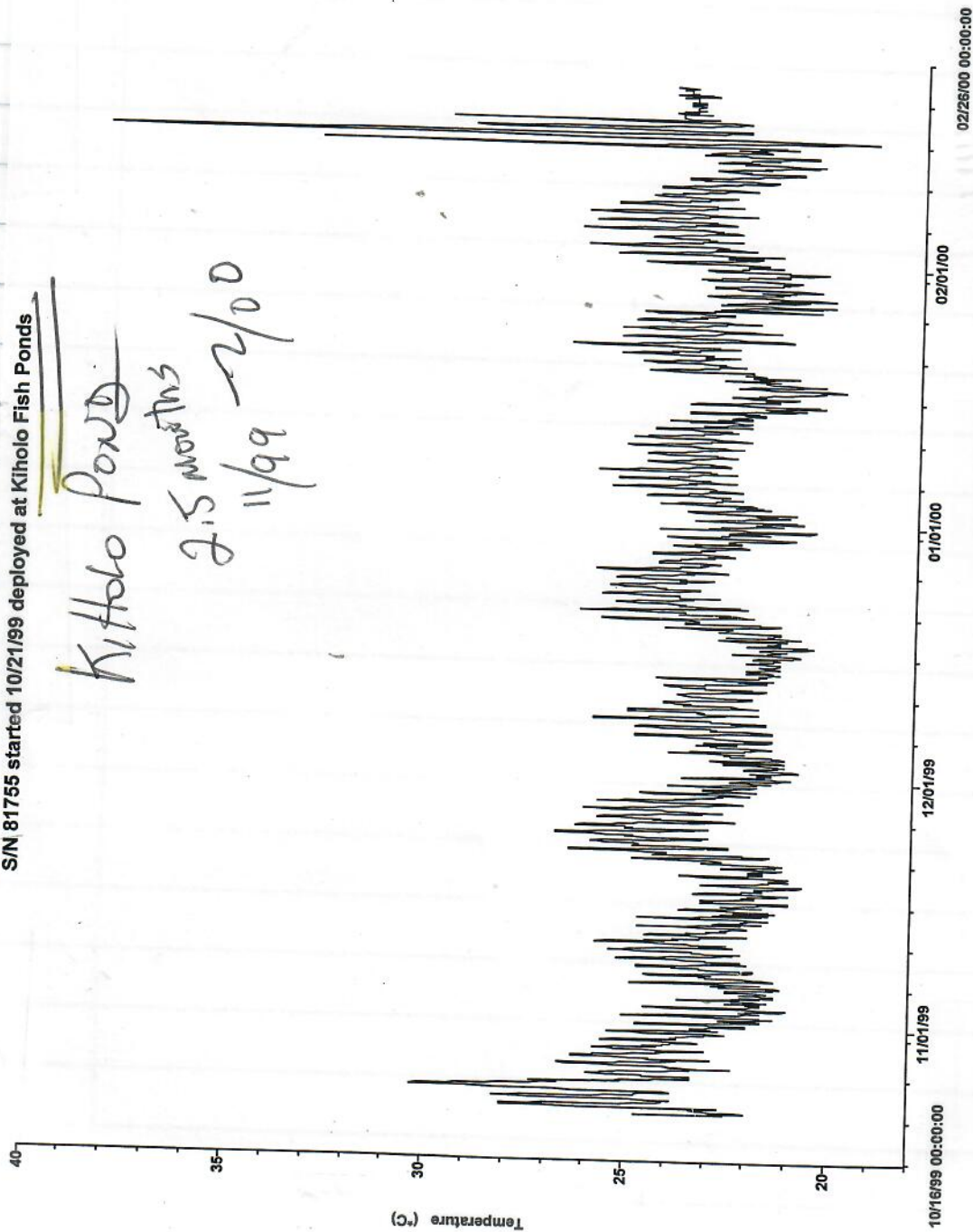
Carlyn Anger  
Karen Gonzalez

S/N 81755 started 10/21/99 deployed at Kiholo Fish Ponds

Kiholo Pond

2.5 months

11/99 - 2/00

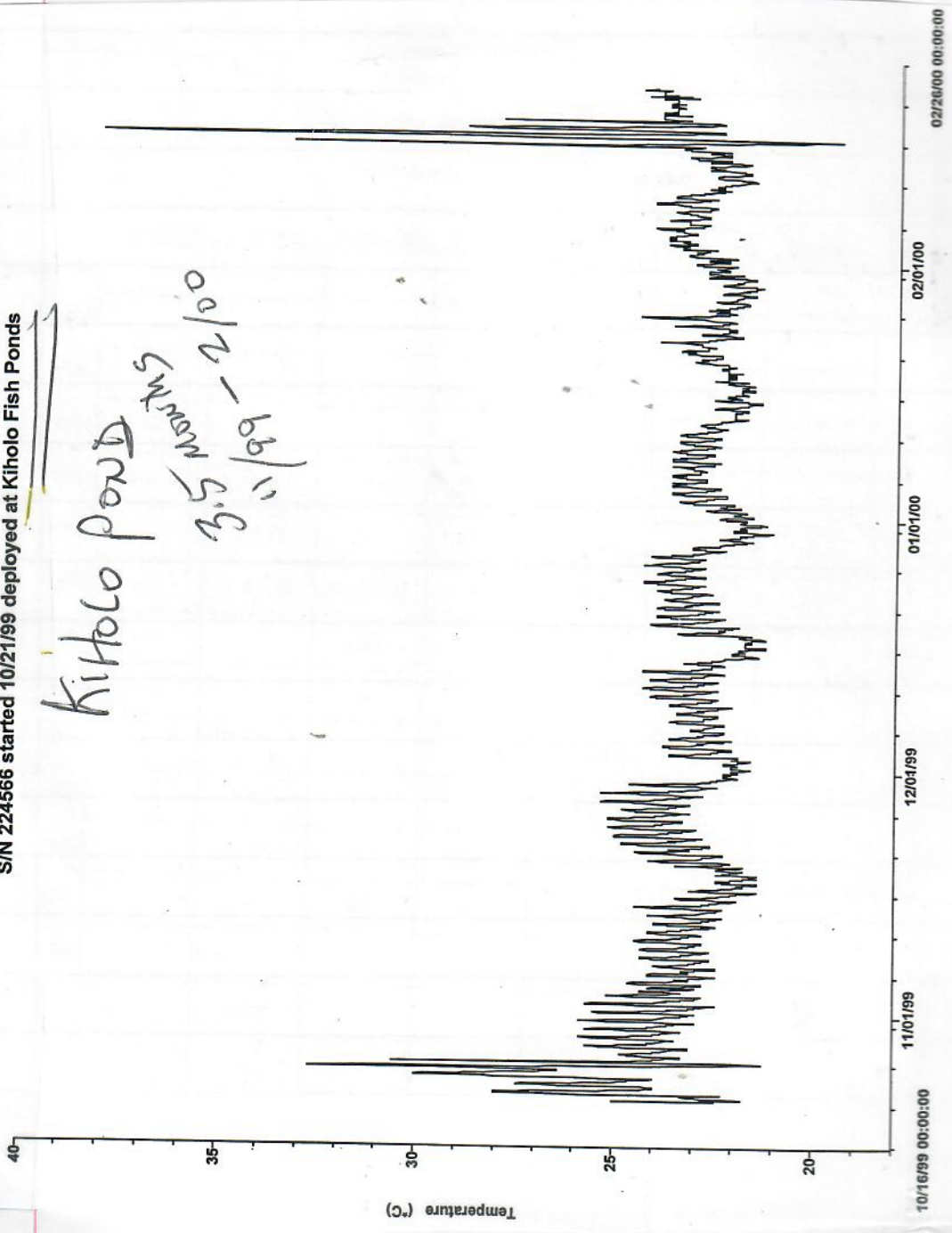


TO MARC RICE HPA 2-PAGES

190

S/N 224566 started 10/21/99 deployed at Kiholo Fish Ponds

Kiholo Pond  
3.5 meters  
11/08/99 - 12/90



192

**SEA TURTLE STUDY SITES OF WEST HAWAII  
RECORD OF EXPEDITIONS ACCOMPLISHED**

Compiled by  
Marine Turtle Research Program  
SWFSC Honolulu Laboratory  
National Marine Fisheries Service  
2570 Dole Street  
Honolulu, Hawaii 96822-2396  
Tel: (808) 983-5733  
Email: gbalazs@honlab.nmfs.hawaii.edu

	Kawaihae	Puako	Keawa Nui	Waikoloa	Kiholo	Kaloko - Honokohau	Kahaluu	Honaunau
1987	---	---	---	---	10	---	---	---
1988	---	---	---	---	2,4,6,10	---	---	---
1989	---	---	---	---	3,5,10	---	---	---
1990	---	6	---	---	1,4,10	---	---	---
1991	---	1,2,3,6,11	6,7,10	---	3	---	---	---
1992	---	2,5,11	3,10	2,4,5,9	1,3,4,9	---	---	---
1993	---	1,4,5,12	1,4,5,6,9	---	2,4	---	---	---
1994	---	1	5,6,11	---	1,2,9	7	3,5	12
1995	---	1	---	2	3,9	---	3,6	1
1996	---	4,5,6,7,10, 11,12	---	---	2,7,9,10,12	---	---	11
1997	11	1,4,8	10	9	1,4	---	---	---
1998	---	3,4,5	9	---	1,2,4,5,11	---	---	---
1999	---	---	8,9	---	2,6,9,10,12	10	---	---
2000	---	4,5,8,12	6,8	---	1,6	4,10	---	---
2001	---	4,5,8	---	1	10	5,6,8,12	---	8,11
2002	3	---	---	11	---	6, 10	4	---
2003		3			1,3	1		

1 = January, 2 = February, 3 = March, etc.

**TITLE:** Determine Status, Health, and Habitat Use of Green Sea Turtles at Kaloko-Honokohau NHP

**PARK:** Kaloko-Honokohau National Historical Park

**RECOMMENDED FUNDING SOURCE:** SMALL PARK NRPP

**ABSTRACT:**

Juvenile green sea turtles are increasingly abundant within Kaloko-Honokohau NHP (KAHO). The purpose of this project is to assess the status, health and habitat requirements of the recovering population of green turtles within the park. The project will be coordinated with Dr. David Duffy of the Research Corporation of the University of Hawaii and the Department of Botany. This project is part of a larger program of turtle inventory and monitoring begun in 1999 in conjunction with National Marine Fisheries and Hawaii Preparatory Academy.

**DESCRIPTION OF THE PROBLEM:**

**Introduction**

KAHO fronts over one mile of marine shoreline and contains approximately 550 acres of submerged lands within its legislated boundary. The park is one of a few areas along the West Hawaii coastline where juvenile green turtles can be found at a higher density than surrounding areas. The park waters provide the turtles a natural protected area for feeding, resting, and basking. The park also provides an accessible venue for visitors to observe the sea turtles. These turtles are a threatened species and are protected by the Endangered Species Act.

**Problem Statement**

Local informants believe that the number of turtles within the park has increased substantially during the past few years. KAHO needs to better understand the population structure, habitat requirements, and general health of this important, threatened resource. In 2000, six turtles were found dead within the park. Prior to 2000 only one dead turtle had been reported. The six were found in late spring, when growth of grazing beds may be at its lowest. No conclusive cause of death was determined from necropsies on four of the turtles. All four individuals showed signs of emaciation, in some cases extreme. It is likely that the increased mortality is a function of an increased population competing for limited food resources. However, KAHO needs to identify these food resources and determine whether they are stable or are being affected by other factors. Identification and monitoring of turtle habitat requirements is critical to managing the marine resources in the park for several reasons: 1) Turtle foraging affects habitat structure and consequently affects other animals using that habitat. 2) Identification of quality and quantity of foraging habitat is important to safeguard against potential degradation of these areas from human activities such as anchor damage, reef walking, run-off and siltation. 3) West Hawaii, including KAHO, is currently free of the disease known as green turtle fibropapillomatosis (GTFP). The disease was reported on Oahu in 1958 and has increased rapidly since the 1980's. It is most commonly found in juvenile turtles

living nearshore adjacent to large human populations. Careful monitoring of the health of the KAHO turtles and their habitat will provide important baseline data.

**RECOMMENDED ACTIONS**

**Objectives**

The objectives of this project are to:

1. Quantify the population abundance and density in KAHO.
2. Identify available green turtle foraging habitat, use patterns, and nutritional quality of forage.
3. Identify the health status of turtles within the park.

**Methodology**

Standard mark re-capture of live turtles will be used to assess population size. All work with living turtles will be carried out under the supervision of George Balazs, head of turtle research for National Marine Fisheries Service. Habitat identification will be made via SCUBA and snorkeling surveys. Foraging habitat areas will be mapped and entered in to the park GIS database. Foraging areas will be inventoried and monitored monthly for changes in composition and availability of forage. Nutritional analyses will be made of forage and of food contents found in the mouths of captured turtles and an in-depth analysis of food and digestive processes from material found in the gut of dead turtles.

Habitat use will be monitored by attachment of 15 ultrasonic pingers and 4 time depth recorders to track habitat use and feeding patterns of 19 turtles. Three underwater "listening" stations with a range of 500 meters will be placed in identified foraging habitat and will remotely monitor the arrival and departure of the turtles bearing ultrasonic tags.

The health of captured live turtles and stranded turtles will be assessed by body measurements and examination, blood samples, oral swabs and tissue samples from necropsied turtles. Blood sample and oral swab data will be compared to samples taken in 2000.

**Products**

This project will produce several sets of data and reports from the different analyses of turtle population, habitat use, health and nutrition. A GIS database of turtle foraging habitat will be created along with baseline data for turtle habitat use within the park. Ultimately this data will be pulled together with previously collected information for a report on turtle health and nutrition in KAHO.

**Evaluation**

This project will be an important start to understanding turtle habitat use, health, and nutritional needs in KAHO. Data collected during this project will help the park better manage sea turtles and underwater resources.

**BUDGET**

In Kind Services



HP1

This project is being carried out through the cooperation of several agencies and institutions with KAHO. This cooperative arrangement keeps cost low and makes this project more efficient and effective.

KAHO Staff  
Stanley Bond- Resource Manager  
Sallie Beavers- Marine Ecologist  
Other Support Staff as needed  
National Marine Fisheries  
George Balazs  
Support Staff  
USGS-BRD  
Dr. Theiry Work- Veterinarian  
Support Staff  
Hawaii Preparatory Academy  
Mark Rice- Turtle Program Coordinator  
HPA Students and Staff

Costs	
3 VR2 monitors @ \$1000 each	\$3000
15 Sonic Tags @ \$265	\$3975
Computer Download Program	\$135
4 TDR	\$6000
Receiver	\$1000
1 Hydrophone @250	\$250
Blood and Swab and Gut Analysis	\$2500
Identification and Analysis of Food Sources And Nutrition Potential	\$2000
Travel and Expendables for Marine Fisheries And BRD Staff	\$1000
TOTAL	\$19860

#### Future Funding

The intent of this project is to gather baseline data on the status, health and habitat requirements of the recovering population of green turtles within the park. Project findings should point the way towards additional studies if they are required.

Tim & Cook

Theresa

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Task	May-01	Jun-01	Jul-01	Aug-01	Sep-01	Oct-01	Nov-01	Dec-01	Jan-02	Feb-02	Mar-02	Apr-02	May-02	Jun-02	Jul-02	Aug-02	Sep-02	Oct-02	Nov-02	Dec-02
<b>Habitat Identification</b>																				
Nearshore Habitat Survey	x	x	x																	
Nearshore Habitat Mapping	x	x	x	x	x															
Enter data into GIS	x	x	x	x	x															
<b>Offshore Habitat Survey</b>																				
Offshore Habitat Survey			x	x	x															
Offshore Habitat Mapping			x	x	x															
Enter data into GIS			x	x	x															
Develop maps							x	x									x	x		
<b>Population Assessment</b>																				
Initial Marking of Turtles			x																	
Recapture; Marking				x	x	x	x	?	?	?	?	?	?	?	?	?				
<b>Habitat Assessment</b>																				
Shoreline Transect/Habitat Surveys				x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Offshore Transect/Habitat Surveys				x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
<b>Nutritional Analyses</b>																				
Sampling from Captured Turtles				x	x	x	x	?	?	?	?	?	?	?	?	?				
Laboratory Analysis				x	x	x	x	x	x	x	x	x	x	x	x	x				
<b>Necropsies</b>																				
As Needed	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Analysis of Samples (as above)	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
<b>Telemetry</b>																				
Monitor Site location (Hab. Survey)			x	x																
Monitor Range Testing			x																	
Monitor Deployment			x																	
Pinger Attachment			x																	
TDR Attachment			x																	
TDR Recovery/redeployment					x	?	?	?	?	?										
Monitor Recovery/redeployment					x	x	x	x	x	x	x	x	x	x	x					
<b>Data Management</b>																				
Data Entry		x	x	x	x	x	x	x	x	x	x	x	x	x	x					
Data Analysis			x	x	x	x	x	x	x	x	x	x	x	x	x	x				
Report																				x

Theresa

03/04/02 Tuesday evening TIM & COOKSIE

142 Puako Beach Road

Jill K. Quaintance (you know me)

(102)

I-TURN  
CHANG

7:30

8:30

~~11~~

Karen Yamashita

Shirley Ann Fukunoto

George Wata

Tim & Kooksie McGullogh  
George, Mark & George - come back again!

Star Simpson

Scott Torborg

3/5/02 Kiholo (BASKING TURTLES)  
Wednesday Star Simpson

Aimee Clark

Alex Beaton (17th grade)

7:30 - 8:30 I-TURN  
CHANG

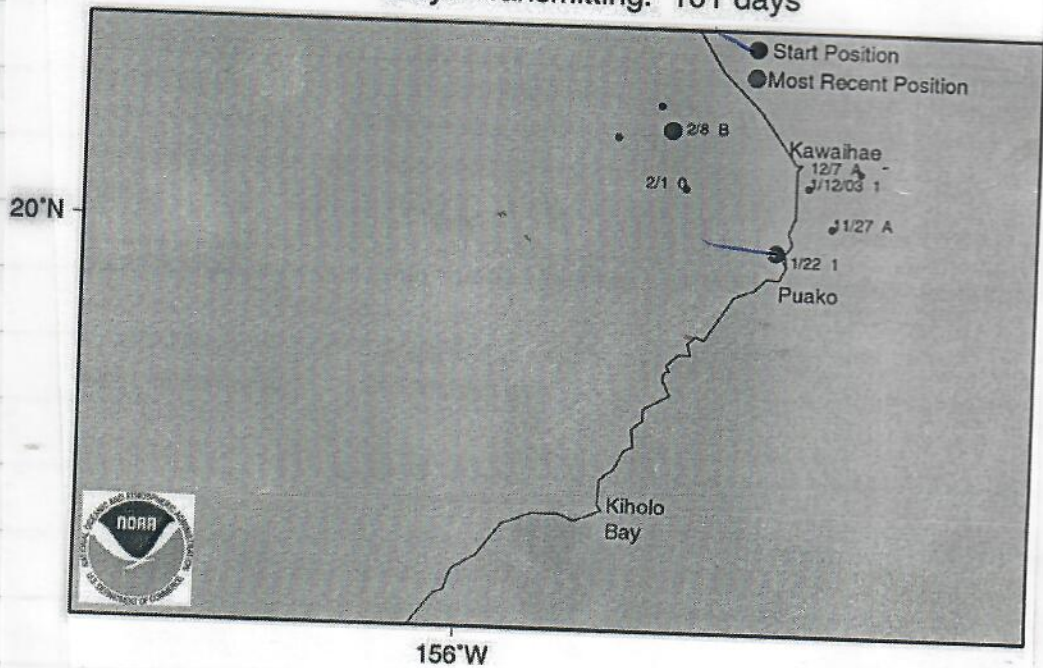
Karen Yamashita  
Bill Culbertson (DICK)

M.R. Ricci

George Wata

3/31/03

Movement of Green Turtle 22151 *Thurston Pond*  
Duty Cycle: 12 hr on, 48 hr off SCL: 61.0 cm  
Days Transmitting: 101 days



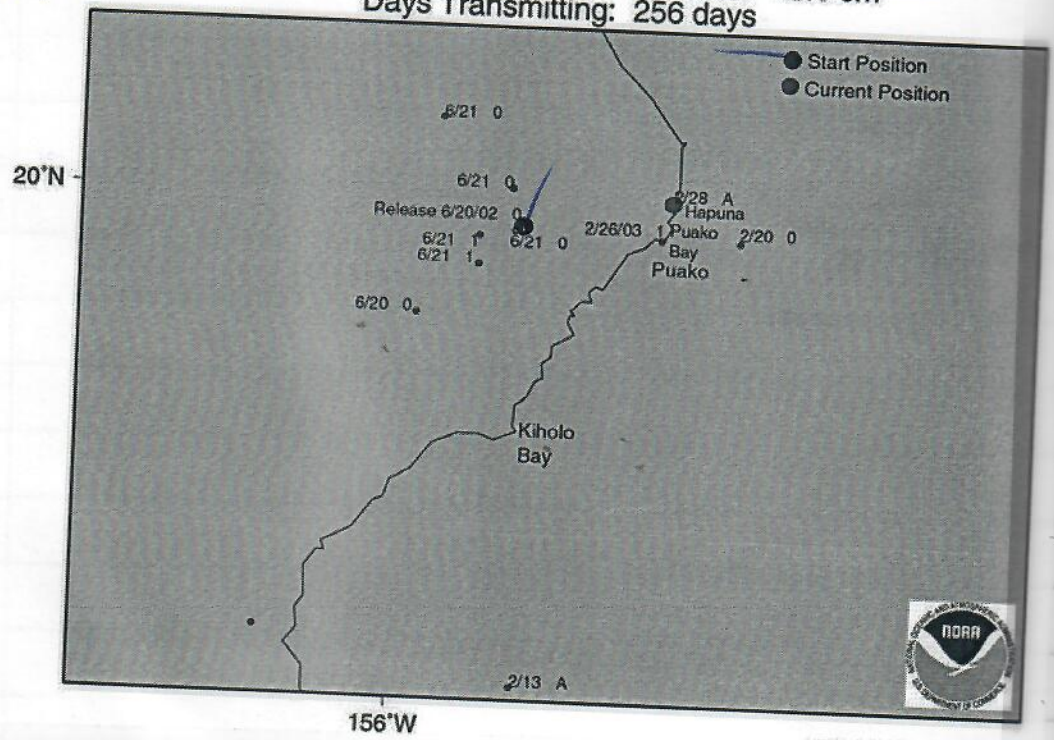
GMT Map by Denise Parker 02/03/03

*Olinda Nagel*  
*Jonna Beletta*  
*Karen Yamashita*

87

3/3/03

Movement of Mauna Lani Juvenile Green Turtle 22270  
Duty Cycle: 12 hr on, 48 hr off SCL: 45.5 cm  
Days Transmitting: 256 days



GMT Map by Denise Parker 02/03/03

Anne Clark  
 Lisa Bratton (17th grade)  
 7/2 - 7/26 (Turtle)  
 Karyn Young (SAD)  
 Jeff (Turtle) (nick)  
 M.P. Liu  
 Josh Wat

22 January 2003

200

Participants

Kaloko

1. Brett D. Matsumoto
2. ~~Santa~~ (Sandy Watson)
3. Blaise DeLima
4. Eric Niebylski
5. ~~Emily Johnston~~
6. ~~Phil Quintance~~
7. Lisa Marrack
8. Deminse Carden
9. Tyler Zukrai
10. Camille Marie
11. Randy Nagel
12. Jenna Beletic
13. Karen Yamasaki
- 14.
- 15.

MULTIPLICATION TABLE

21 JANUARY 03  
KITULO PARTICIPANT LIST

- ① Karen Yamamoto
- ② Quynh Watkins
- ③ Whitney Harvey (Whitney Harvey) 7<sup>th</sup>
- ④ Brett Matzuka
- ⑤ Nida Stomski ski 7<sup>th</sup>
- ⑥ Lewis Polak (Louis Polak) 7<sup>th</sup> grade
- ⑦ Hans L. Kellhaus 7<sup>th</sup> grade
- ⑧ Becky Emory (German w/ American father)
- ⑨ Tito Jankowski (Tito Jankowski)
- ⑩ ~~Sandy~~ (Sandy Watson)
- ⑪ Jill Quintanap
- ⑫ George Watson  
GB & Karen Arthur
- ⑬ Marc Rice for ~1.5 hours

- Block Number  
- CD of all  
west Itua

**TITLE:** Determine Status, Health, and Habitat Use of Green Sea Turtles at Kaloko-Honokohau NHP

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**In Kind Services**



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## **RECOMMENDED ACTIONS**

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This project will produce several sets of data and reports from the different analyses of turtle population, habitat use, health and nutrition. A GIS database of turtle foraging habitat will be created along with baseline data for turtle habitat use within the park. Ultimately this data will be pulled together with previously collected information for a report on turtle health and nutrition in KAHO.

### **Evaluation**

This project will be an important start to understanding turtle habitat use, health, and nutritional needs in KAHO. Data collected during this project will help the park better manage sea turtles and underwater resources.

## **BUDGET**

### **In Kind Services**

This project is being carried out through the cooperation of several agencies and institutions with KAHO. This cooperative arrangement keeps cost low and makes this project more efficient and effective.

**KAHO Staff**

- Stanley Bond- Resource Manager
- Sallie Beavers- Marine Ecologist
- Other Support Staff as needed
- National Marine Fisheries
- George Balazs
- Support Staff
- USGS-BRD
- Dr. Theiry Work- Veterinarian
- Support Staff
- Hawaii Preparatory Academy
- Mark Rice- Turtle Program Coordinator
- HPA Students and Staff

**Costs**

3 VR2 monitors @ \$1000 each	\$3000
15 Sonic Tags @ \$265	\$3975
Computer Download Program	\$135
4 TDR	\$6000
Receiver	\$1000
1 Hydrophone @250	\$250
Blood and Swab and Gut Analysis	\$2500
Identification and Analysis of Food Sources And Nutrition Potential	\$2000
Travel and Expendables for Marine Fisheries And BRD Staff	\$1000
<b>TOTAL</b>	<b>\$19860</b>

**Future Funding**

The intent of this project is to gather baseline data on the status, health and habitat requirements of the recovering population of green turtles within the park. Project findings should point the way towards additional studies if they are required.

Task	May-01	Jun-01	Jul-01	Aug-01	Sep-01	Oct-01	Nov-01	Dec-01	Jan-02	Feb-02	Mar-02	Apr-02	May-02	Jun-02	Jul-02	Aug-02	Sep-02	Oct-02	Nov-02	Dec-02
<b>Habitat Identification</b>																				
Nearshore Habitat Survey	x	x	x																	
Nearshore Habitat Mapping	x	x	x	x	x															
Enter data into GIS	x	x	x	x	x															
Offshore Habitat Survey			x	x	x															
Offshore Habitat Mapping			x	x	x															
Enter data into GIS			x	x	x															
Develop maps								x	x							x	x			
<b>Population Assessment</b>																				
Initial Marking of Turtles			x																	
Recapture; Marking					x	x	x	x	?	?	?	?	?	?	?	?	?			
<b>Habitat Assessment</b>																				
Shoreline Transect/Habitat Surveys					x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Offshore Transect/Habitat Surveys					x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
<b>Nutritional Analyses</b>																				
Sampling from Captured Turtles			x	x	x	x	x	?	?	?	?	?	?	?	?	?	?			
Laboratory Analysis			x	x	x	x	x	x	x	x	x	x	x	x	x	x	x			
<b>Necropsies</b>																				
As Needed			x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Analysis of Samples (as above)			x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
<b>Telemetry</b>																				
Monitor Site location (Hab. Survey)			x	x																
Monitor Range Testing																				
Monitor Deployment																				
Pinger Attachment																				
TDR Attachment																				
TDR Recovery/redeployment								x	?	?	?	?	?	?						
Monitor Recovery/redeployment								x	x	x	x	x	x	x	x	x	x			
<b>Data Management</b>																				
Data Entry			x	x	x	x	x	x	x	x	x	x	x	x	x					
Data Analysis																				
Report																				

"Drain Gain."  
-George

# USEFUL INFORMATION

## CONVERSION TABLE

METERS	YARDS	INCHES
1.000	1.093	39.37
.914	1.000	36.00

CENTIMETERS	INCHES	FEET
1.00	.394	.0328
2.54	1.000	1/12
30.48	12.000	1.000

KILOMETERS	MILES
1.000	.621
1.609	1.000

GRAMS	OUNCES	POUNDS
1.00	.035	.002
28.35	1.000	1/16
453.59	16.000	1.000
1,000.00	35.274	2.205

KILOGRAMS	OUNCES	POUNDS
1.000	35.274	2.205
.028	1.000	1/16
.454	16.000	1.000

LITERS	PINTS	QUARTS	GAL.
1.000	2.113	1.057	.264
.473	1.000	1/2	1/8
.946	2.000	1.000	1/4
3.785	8.000	4.000	1.000

**LENGTH**

1 meter (m)	=	100 cm	=	1,000 mm
1 millimeter (mm)	=		=	.001 m
1 centimeter (cm)	=		=	.01 m
1 decimeter (dm)	=		=	.1 m
1 decameter (dkm)	=		=	10 m
1 hectometer (hm)	=		=	100 m
1 kilometer (km)	=		=	1,000 m

**CAPACITY**

1 liter (l)	=	100 cl	=	1,000 ml
1 milliliter (ml)	=		=	.001 l
1 centiliter (cl)	=		=	.01 l
1 deciliter (dl)	=		=	.1 l
1 decaliter (dkl)	=		=	10 l
1 hectoliter (hl)	=		=	100 l
1 kiloliter (kl)	=		=	1,000 l

**WEIGHT**

1 gram (g)	=	100 cg	=	1,000 mg
1 milligram (mg)	=		=	.001 g
1 centigram (cg)	=		=	.01 g
1 decigram (dg)	=		=	.1 g
1 decagram (dkg)	=		=	10 g
1 hectogram (hg)	=		=	100 g
1 kilogram (kg)	=		=	1,000 g

### Table of Time Measure

60 seconds	=	1 minutes
60 minutes	=	1 hour
24 hours	=	1 day
7 days	=	1 week
30 days	=	1 calendar month
12 months	=	1 year
365 days	=	1 common year
366 days	=	1 leap year
100 years	=	1 century

### Table of Dry Measure

2 pints (pt.)	=	1 quart (qt.)
8 quarts	=	1 peck (pk.)
4 peck	=	1 bushel (bu.)
1 cord	=	128 cu. ft.

### Table of Liquid Measure

4 gills (gi.)	=	1 pint (pt.)
2 pints	=	1 quart (qt.)
4 quarts	=	1 gallon (gal.)
3 1/2 gallons	=	1 barrel (bbl.)
2 barrels	=	hogshead (hhd.)

### Table of Paper Measure

24 sheets	=	1 quire
20 quires	=	1 ream
10 ream	=	1 bale

### Table of Linear Measure

12 inches	=	1 foot
3 feet	=	1 yard
16-1/2 ft. (5-1/2 yds.)	=	1 rod
660 feet	=	1 furlong
320 rods (5280 ft.)	=	1 mile

### Miscellaneous Measures

12 units	=	1 dozen
12 doz.	=	1 gross
12gr.	=	1 great gross
20 units	=	1 score
1 hand	=	4 inches
1 fathom	=	6 feet
1 knot	=	6086 feet
3 knots	=	1 league
1 bu. potatoes	=	60 lbs.
1 barrel flour	=	196 lbs.
1 cu. ft. of water	=	7.48 liquid gals.
		and weighs 62.425 lbs
Diameter of circle x 3.1416 =		circumference
Diameter of circle square x .7854 =		area
Atmospheric pressure is 14.7 lbs.		per sq. in. at sea level.
13-1/2 cu. ft. of air weighs 1 lb.		

### Table of the Cubic Measure

1728 cubic inches	=	1 cubic foot
27 cubic feet	=	1 cubic yard
128 cubic feet	=	1 cord of wood
24 3/4 cubic feet	=	1 perch of stone
NOTE: A cord of wood is a pile 8 feet long, 4 feet wide, and 4 feet high.		
A perch of stone or brick is 16 1/2 feet long, 1-1/2 feet wide, and 1 foot high.		

### Table of Avoirdupois Weight

16 drams	=	1 ounce (oz.)
16 ounces	=	1 pound (lb.)
100 pounds	=	1 hundred-weight (cwt.)
2000 pounds	=	1 ton (T.)
2240 pounds	=	1 long ton (L.T.)

### Table of Troy Weight

24 grains (gr.)	=	1 penny-weight (dwt)
20 penny-weights	=	1 ounce (oz.)
12 ounces	=	1 pound (lb.)

### Table of Circular Measure

60 seconds (")	=	1 minute (')
60 minutes	=	1 degree (°)
360 degrees	=	1 circumference
A degree of the earth's surface or a meridian = 69.16 miles at the equator.		

### Table of Apothecaries' Weight

20 grains (gr.)	=	1 scruple
3 scruples	=	1 dram
8 drams	=	1 ounce
12 ounces	=	1 pound (lb.)

### Table of Surface Measures

144 sq. in	=	1 sq. ft.
9 sq. ft.	=	1 sq. yd.
30 1/4 sq. yds.	=	1 sq. rod
160 sq. rods	=	1 acre
640 acres	=	1 sq. mile

An acre measures 208.71 ft. on each side.  
A section of land is 1 sq. mile.  
A quarter section is 160 acres.  
A township is 36 sq. miles.

## MULTIPLICATION TABLE

1	2	3	4	5	6	7	8	9	10	11	12
2	4	6	8	10	12	14	16	18	20	22	24
3	6	9	12	15	18	21	24	27	30	33	36
4	8	12	16	20	24	28	32	36	40	44	48
5	10	15	20	25	30	35	40	45	50	55	60
6	12	18	24	30	36	42	48	54	60	66	72
7	14	21	28	35	42	49	56	63	70	77	84
8	16	24	32	40	48	56	64	72	80	88	96
9	18	27	36	45	54	63	72	81	90	99	108
10	20	30	40	50	60	70	80	90	100	110	120
11	22	33	44	55	66	77	88	99	110	121	132
12	24	36	48	60	72	84	96	108	120	132	144

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