Saami

SUMMARY

VADOO PILOT PROJECT FOR SEA TURTLE AND MARINE SPECIES

18 JULY 1999

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TOTAL 13 PAGES WITH THIS COVER

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VADOO PILOT PROJECT FOR SEA TURTLE
AND MARINE SPECIES
C/O VADOO DIVING PARADISE

SUMMARY OF THE VADOO PILOT PROJECT FOR SEA TURTLE AND MARINE SPECIES

OBJECT:

* RESEARCH WORK FOR MARINE SPECIES(MAINLY SEA TURTLES).
* DISSEMINATION OF INFORMATION ABOUT THE ENVIRONMENT OF MALDIVES TO OVERSEAS EXPERTS AS INTERNATIONAL EXCHANGE.
* INTRODUCE THE SEA TURTLES TO SCHOOL STUDENTS(INTRODUCE THE NATURE OF MALDIVES TO YOUNG GENERATION AS WE THINK THIS WILL EFFECT IN FUTURE AS CONSERVATION).
* NECESSARY WORK WHICH RELATIVE WITH ABOVE OBJECT.

RESERACH ACTIVITIES FOR SEA TURTLES:

1, MODE OF LIFE(ECOLOGY)

1-1, NESTING RESEARCH: INTERNESTING INTERVALS, CLUTCH SIZE, INCUBATION PERIOD AND HATCHING SUCCESS WITH SAND TEMPERATURE.

EG: LAST YEAR(1998), WE OBTAINED 8 HAWKSBILL CLUTCHES IN VADOO. AND THERE ARE RECORD OF INTERNESTING INTERVALS AND CLUTCH SIZE FOR 8 NESTS, ALSO WE COULD MAINTAIN DAILY RECORD OF SAND(NEST) TEMPERATURE FOR 6 NESTS. THIS IS TO KNOW THE RELATIONSHIP BETWEEN TEMPERATURE AND INCUBATION PERIOD. AND SHORTEST EMERGENCE PERIOD WAS 52 DAYS AND LONGEST WAS 70 DAYS.

ATTACHED 8 PAPERS AS BELOW.

* NESTING DATE, HATCHING DATE, AND INCUBATION PERIOD OF EACH CLUTCH LAID IN 1998. (1 PAGE)
* TABLE 1, NESTING DATE, TIME, LOCATION, SHAPE OF THE EGG CHAMBERS AND NUMBER OF THE EACH NEST DEPOSITED IN 1998. (2 PAGES)
* TABLE 2, HUTCHING DATE, TIME, NUMBER OF HUTCHLING SUCCESS OF EACH CLUTCH. (2 PAGES)
* TABLE 5, MEAN VALUES OF EGG DIAMETER AND WEIGHT OF EACH CLUTCH. (1 PAGE)
* RELATIONSHIP BETWEEN MEAN SAND TEMPERATURES AT EACH NEST. (1 PAGE)
* WATER, AIR AND SAND TEMPERATURE DURING INCUBATION PERIOD OF CLUTCH E. (1 PAGE)

TOTAL 8 PAGES

1-2, HEAD START WITH TAGGING AND TRACKING RESEARCH

NUMBER OF HEAD START:	HAWKSBILL	128 NUMBERS (ACCUMLATED)
	GRENN TURTLE	252 NUMBERS (ACCUMLATED)
	TOTAL	380 NUMBERS (ACCUMLATED)
TAGGING WITH WILD TURTLES:	HAWKSBILL	68 NUMBERS (ACCUMULATED)

THERE ARE SOME POINTS OF TAGGING AS BELOW.

* WE HAVE PUT 4 YELLOW TAGS ON EACH OF THE LEGS OF THE PARENT FEMALE WHEN SHE CAME TO LAY THE EGGS ON 03 JUN 1998.

* FROM DECMBER 1998, WE STARTED TO USE THE RED COLOR OF TAGS FOR WILD TURTLES. ALSO, WILD TURTLES PREVIOUSLY RELEASED WITH YELLOW TAGS ARE BEEN RECAPTURED AND RE RELEASED WITH NEW TAGS(RED COLOR).

* WE HAVE TAGED A WILD MATURED MALE THIS DECEMBER. IT IS RARE TO SEE MATURED MALE IN THE SEA.

* AT THIS MOMENT, WE ARE USEING 4 KIND OF TAGS AS,
  1)YELLOW COLOR FOR HEAD START & WILD TURTLES WHICH WE TAGGED UNTILL NOV/98.
  2)RED COLOR FOR WILD TURTLES WHICH WE TAGGED FROM DEC/98
  3)WHITE COLOR FOR TURTLES WHICH IS NOT SUITABLE TO TAG THE YELLOW TAG. THIS WHITE TAG IS SMALLER THAN YELLOW TAG.
  4)INNER TAG WE HAVE TRIED TO PUT 6 TAGS ONLY AS IT IS TOO COSTLY AND WE HAVE TO HAVE READER, HOWEVER IT WILL STAY WITH TURTLES LONGER THAN NORMAL TAGS.

TRACKING RESEARCH:

SO FAR, THERE WAS ONE INFORMATION FROM OVERSEA ABOUT A GREEN TURTLE WHICH HEAD STARTED FROM VADOO. THE RECORD IS,

TAG NO:150, BORN IN VADOO IN 1993
RELEASED FROM VADOO ON 09/OCT/96
(THE TURTLE WAS SEEN UNTILL 14/OCT/96 AT VADOO HOUSE REEF)
FOUND IN KERALA(INDIA) ON 14/NOV/96

WE RELEASED TAG NO:171 ON SAME DAY WITH TAG NO:150. IT WENT TO ALI ATOLL AND IT IS ABLE TO SEE IT NEAR LILY BEACH RESORT TODAY.

HAWKSBILLS WERE FOUND AT COCOA ISALND(SOUTH MALE' ATOLL), MALE' INTERNATIONAL AIRPORT, BATHALA ISLAND(ALI ATOLL), VADOO HOUSE REEF AND THE REEF BETWEEN VADOO TO EMBUDHUFINOLHU.

TAG NO:40, BORN IN VADOO IN 1992
RELEASED FROM VADOO ON 27/SEP/94
(THE TURTLE WAS SEEN UNTILL 15/JAN/95 AT VADOO HOUSE REEF)
FOUND AT COCOA ISLAND ON 15/FEB/95
FOUND AT VADOO CAVE ON 28/APR/95
THE TURTLE WAS SEEN OFTEN UNTILL 23/MAR/99 AT VADOO HOUSE REEF.

TAG NO:289, BORN IN BANDOS IN 1995
RELEASED FROM VADOO ON 10/OCT/97
THE DEAD BODY WAS FOUND AT BATHALA ON 30/DEC/97

WE OBSERVE VADOO HOUSE REEF, VADOO CAVE, VADOO CORAL GARDEN, VADOO PASS, HELMUT REEF(NEXT REEF OF VADOO) AND EMBUDHU EXPRESS ARE THE DIVING SPOT WHERE WE ABLE TO MEET HAWKSBILLS SO OFTEN, ALSO AIRPORT OUTER REEF.
WE ARE OPERATING ABOUT 30 DIVING SPOTS(NORTH & SOUTH MALE' ATOLL) FROM VADOO. IF WE COULD EXTEND OUR ACTIVITIES(TRACKING RESEARCH) TO OTHER AREA OR IF WE COLUD GET INFORMATION FROM OTHER PARTY WE MAY ABLE TO GET THE IDEA ABOUT THE TERRITORY.

HELMUT REEF IS MOST INTERESTING POINT FOR HAWKSBILL.
WE COULD TAGGED AND RECAPTURED AS BELOW.

03/APR/97: 10 TURTLES (WILD TURTLE 9 & HEAD START 1) BY 50 MINUTES DIVING.
04/APR/97: 3 TURTLES (WILD TURTLE 2 & HEAD START 1) BY 50 MINUTES DIVING.

07/DEC/97: 4 TURTLES (WILD TURTLE 4) BY 50 MINUTES DIVING.
08/DEC/97: 6 TURTLES (WILD TURTLE 6) BY 50 MINUTES DIVING.
09/DEC/97: 2 TURTLES (WILD TURTLE 2) BY 30 MINUTES DIVING.
* IN DEC/97, RECAPTURED 3 WILD TURTLES WHICH WE TAGGED IN APR/97 AT HELMUT.

11/DEC/98: 9 TURTLES (WILD TURTLE 8 & HEAD START 1) BY 50 MINUTES DIVING, AM.
11/DEC/98: 9 TURTLES (WILD TURTLE 8 & HEAD START 1) BY 50 MINUTES DIVING, PM.
12/DEC/98: 9 TURTLES (WILD TURTLE 8 & HEAD START 1) BY 50 MINUTES DIVING, AM.
12/DEC/98: 9 TURTLES (WILD TURTLE 8 & HEAD START 1) BY 50 MINUTES DIVING, PM.
* IN DEC/98, RECAPTURED 7 WILD TURTLES(5 TURTLES TAGGED IN APR/97 & 2 TURTLES TAGGED IN DEC/97) AND 1 HEAD START TURTLE.

BY THIS RECORD WE CONSIDER THE AREA(REEF) IS ONE OF PLACE TO FEED THEM. IT MAY GIVE ONE SCIENTIFIC RESON TO PRESERVE REEF.
WE WILL HAVE SAME ACTIVITIES IN AUG/99.

ALSO, WE OBSERVE OUR HOUSE REEF EVERY SUNDAY WITH VIDEO CAMERA TO RECORD THE TURTLE ACITIVITIES AND REEF CONDITION.

IN THE WORLD, THERE ARE VERY FEW RECORD OF RECAPTURINGS, SPECIALY HEAD START. WE HAVE RECAPTURING RECORDS IN VOLUME AND WE HOPE WE ARE ABLE TO STUDY SOMTHING FROM THIS ACTIVITIES.

I-3, PROPORTION MEASUREMENT

WE TAKE PROPORTION MEASUREMENT ONCE IN A MONTH FOR ALL OF TURTLES WHICH ARE WITH US. ALSO WE TAKE MEASURMENT FOR WILD TURTLES AND HEAD STARTS WHEN WE RECAPTURED THEM. THIS WORK MIGHT HELP TO GUESS THE AGE OF WILD TURTLES WHEN WE COMPARE THE GROWTH BETWEEN WILDS AND KEEPINGS.

2, PATHOLOGY

2-1, DISSECTION AND SAMPLING

WE KEEP TISSUE SAMPLES AND BLOOD SAMPLES FOR DNA TESTING AND PATHOLOGY TESTS. IT IS NOT POSSIBLE TO BRING THE SAMPLES IN JAPAN AS THERE IS THE REGURATION FOR RED DATA BOOK AND IT IS VERY COSTLY, HOWEVER WE ARE TRYING TO DO EXAMINATIONS. SO FAR WE HAVE EXAMINED TISSUE SAMLES IN AUSTRALIA FOR PARASITES.

2-2, TREATMENT FOR PATASITES

WE HAD TREATMENT PROGRAMS FOR PARASITE FROM FEB/97 TO SEP/97.

WE DIVIDED INTO 3 GROUPS (HAWKSBILL), EACH GROUP 5 TURTLES.

GROUP 1: PRESCRIBE MEDICINE EVERY ONE WEEK FROM FEB/97 TO SEP/97
GROUP 2: PRESCRIBE MEDICINE EVERY TWO WEEKS FROM FEB/97 TO SEP/97
GROUP 3: NO TREATMENT

PERCENTAGE OF SURVIVAL

GROUP 1: 80 %
GROUP 2: 100 %
GROUP 3: 20 %

THIS TREATMENT PROGRAM HAS TO BE WITH MORE SCIENTIFIC DATA WHICH IS RELATIVE WITH ANTIBODY IN THE BLOOD.
WE WOULD LIKE TO FINALIZE THIS PROGRAM SOON AND WE WOULD LIKE TO PRESENT, HOWEVER THERE ARE OBSTRUCTIONS AS THE COST AND REGURATION.

3, OTHERS

MAKING THE EFFORTS TO IDENTIFY THE TYPES OF SPONGES WHICH HAWKSBILLS MAINLY EAT, BY ANALYSING.

OVERSEAS EXPERTS:

DR NAOKI KAMEZAKI	CHAIRMAN	JAPAN SEA TURTLS ASSOCIATION
DR JOHN S GLAZEBROOK		JAMES COOK UNIVERSITY
MR TATSUYA OHIKE	VETRENERIAN	MINAMICHITA BEACHLAND AUARIUM
MR KEIICHI NOMURA		YAEYAMA KAICHU KOUEN RESEARCH CENTRE

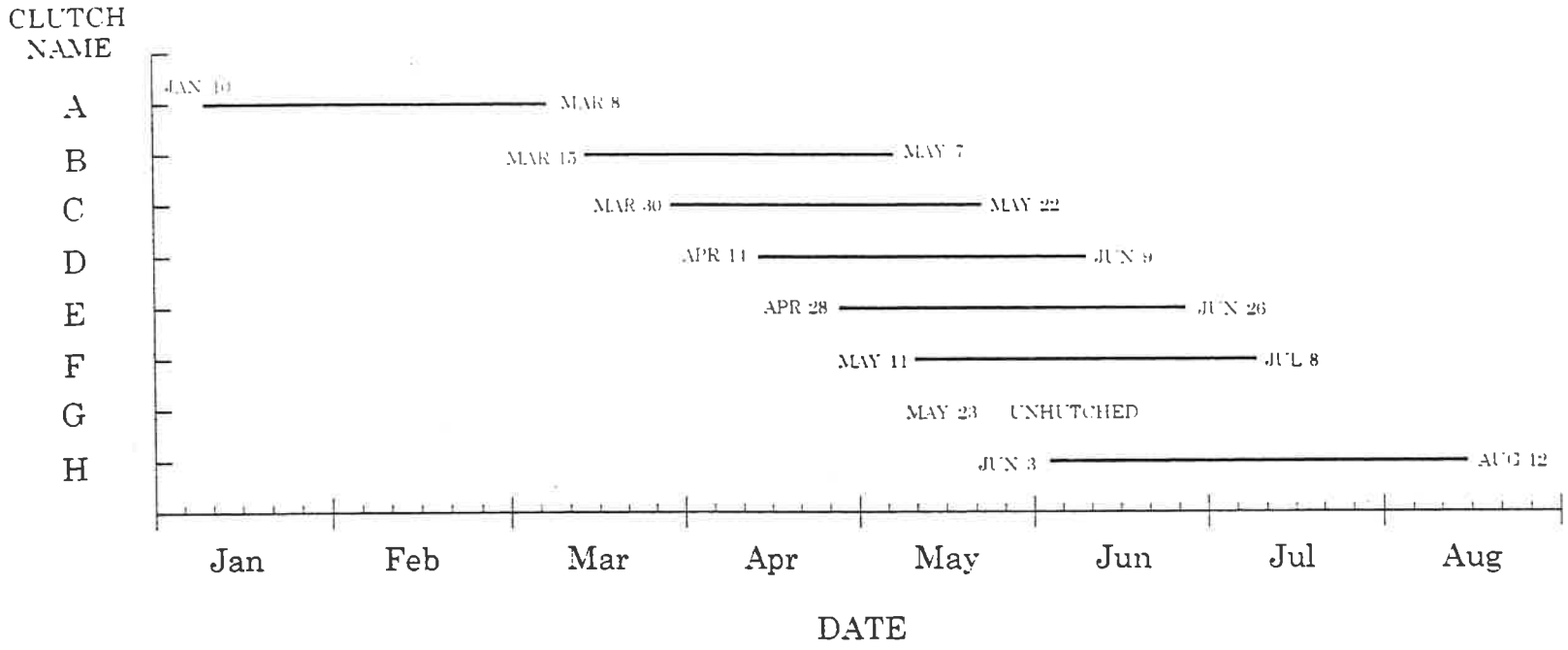


Figure #. Nesting date, hatching date. and incubation period of each clutch laid in 1998.

Table 1. Continued

Clutch name	Diameter (cm)	Total No. of eggs	Normal eggs	Abnormal eggs	Remarks
A	20	122	121	1 (small)	
B	20-27	152	152	0	
C	20-29	138	138	0	
D	22-24	148	148	0	
E	21-25	119	119	0	
F	24-25	152	152	0	
G	-	139	139	0	transplanted to the north beach
H	22	106	106	0	
Mean ± SD	22.93 ± 1.57	134.50 ± 17.05			
Range	20.0-24.5	106-152			

Table 1. Nesting date, time, location, shape of the egg chambers, and number of eggs of the each nest deposited in 1998.

Clutch name	Nesting date	Nesting time	Location	Depth uper (cm)	Depth lower (cm)
A	1998/1/10	(early morning)	north beach	-	30
B	1998/3/15	(midnight)	north beach	10	40
C	1998/3/30	2400HRS	north beach	-	40
D	1998/4/14	(midnight)	north beach, inside of vegetation	27	40
E	1998/4/28	(midnight)	north beach	15	26
F	1998/5/11	(midnight)	north beach	15	39
G	1998/5/23	(midnight)	west beach	25	42
H	1998/6/3	2200	west beach	34	42
Mean + SD				21.00 + 9.10	37.37 + 5.97
Range				10-34	26-42

Table 2. Hutching date. time. number of hutchlings. and hutching success of each clutch.

Clutch name	Hatching date	Hatching time	Incubation periods	Total No. of hatchlings emerged	Remaine (alive)	Remaine (dead)	Unhutched eggs
A	1998/3/8	23:45-03:00	58	103	103	0	0	19
B	1998/5/7	16:00	52	88	80	0	8	54
C	1998/5/22	17:40	52	132	132	1	0	5
D	1998/6/9	15:45	55	141	140	0	1	3
E	1998/6/26	19:30	58	88	85	1	2	22
F	1998/7/8	20:00	57	102	96	0	6	50
G	unhutched	-	-	-	-	-	-	-
H	1998/8/13	2:00	70	34	29	1	4	71
Mean ± SD			57.43 ± 6.11					
Range			52-70					

Table 2. continued.

Clutch name	Missed	Kept	Hutching success (%)	Emergence success (%)	Remarks
A	0	35	84.43	84.43	
B	10	30	57.89	52.63	
C	0	30	95.65	95.65	
D	4	30	95.27	94.59	
E	9	30	73.95	71.43	some hatchlings may escaped
F	0	20	67.11	63.16	
G	-	-	0.00	0.00	
H	1	20	32.08	27.36	
Mean ± SD			63.30 ± 33.07	61.16 ± 33.62	
Range			0.00-95.65	0.00-95.65	

Table 5. Mean values of Egg diameter and weight of each clutch.

	A (n = 27)	B (n = 33)	C (n = 32)	D (n = 50)	E (n = 40)	F (n = 30)	G (n = 30)	H (n = 50)	Total (n = 287)
Egg diameter									
Mean + S.D.	35.56 + 0.70	35.23 + 0.73	35.73 + 0.92	34.93 + 0.83	34.05 + 0.65	36.04 + 0.55	35.57 + 0.94	33.43 + 1.52	34.90 + 1.29
Range	34.05-36.65	33.60-36.70	34.05-37.65	32.70-37.00	32.70-35.35	35.00-37.35	34.25-38.05	29.40-35.8	29.40-38.05
Egg weight									
Mean + S.D.	26.3 + 0.7	25.4 + 0.8	26.1 + 1.2	24.0 + 0.6	22.1 + 2.0	26.1 + 0.9	23.9 + 1.4	21.3 + 2.6	24.1 + 2.4
Range	24.8-28.2	23.8-26.8	24.4-29.6	22.8-25.6	19.6-32.4	24.6-29.0	21.4-26.4	15.4-25.4	15.4-32.4

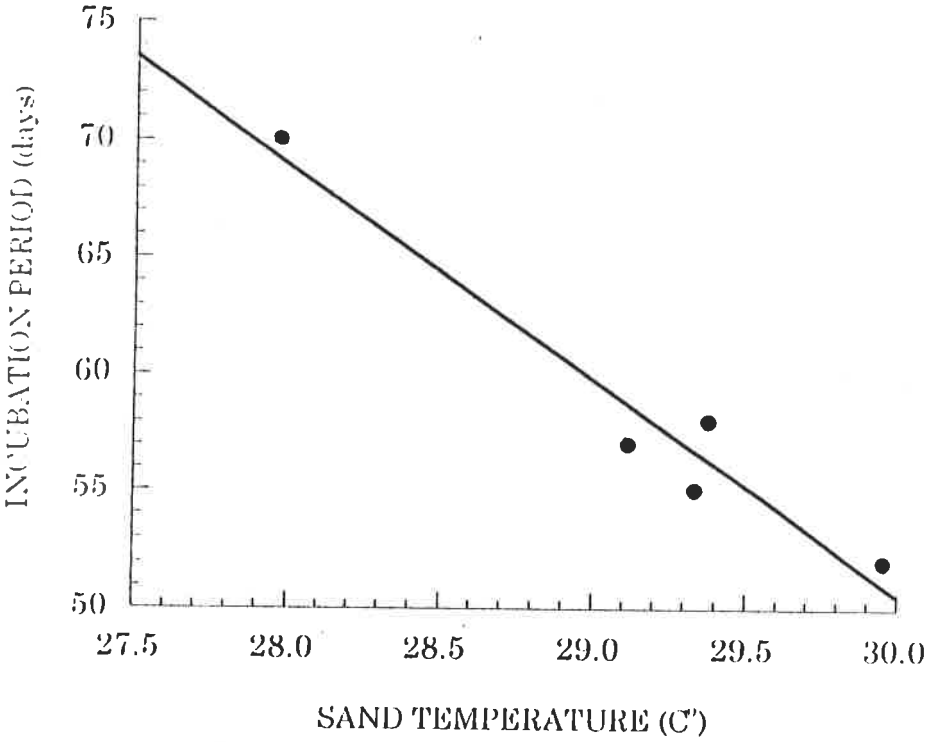
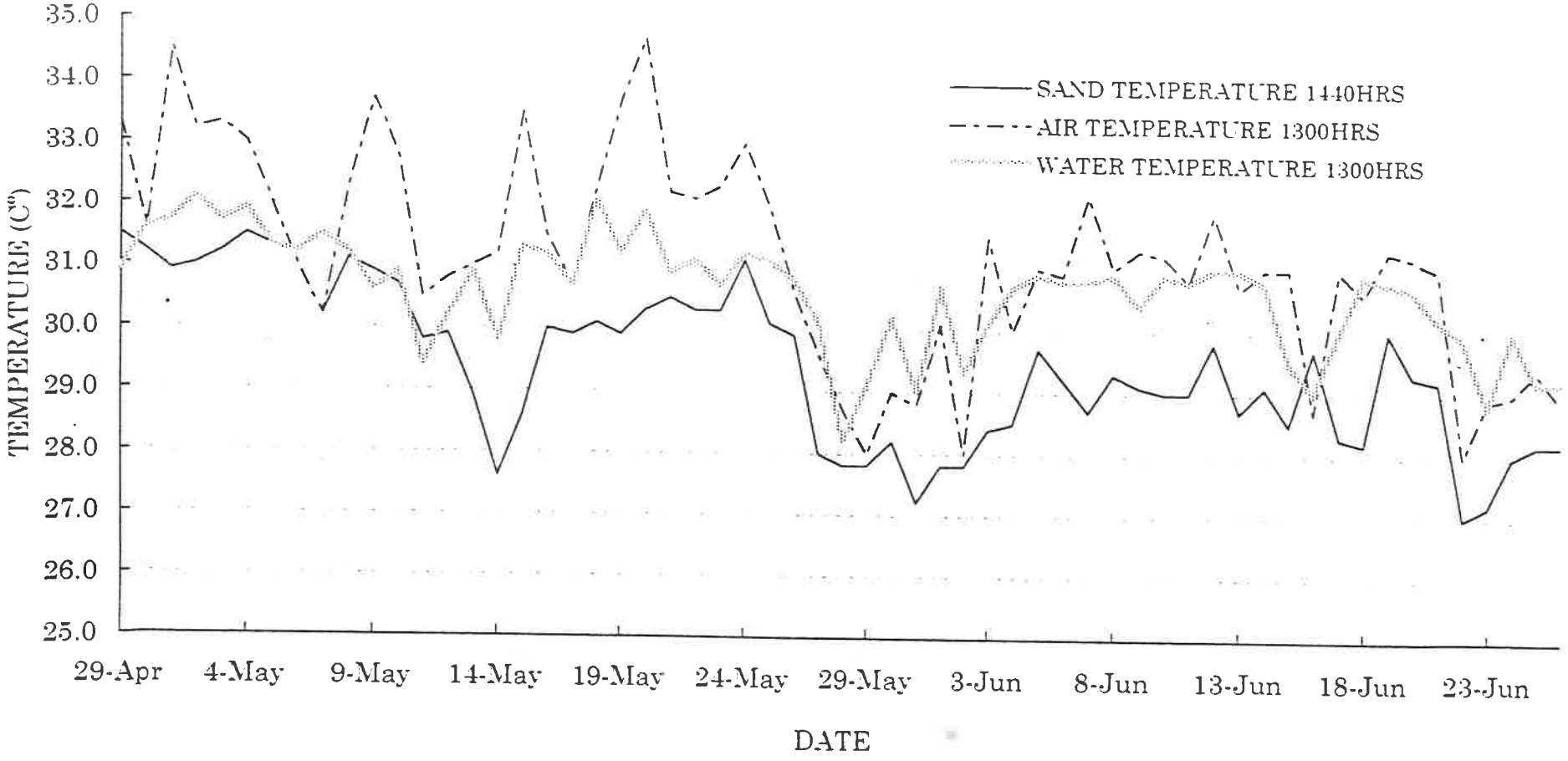


Figure #. Relationship between mean sand temperatures at each nest (depth: 40cm, time: 1440hrs) and incubation periods ($y = 325.97 - 9.18x$, $R = 0.97$, $P < 0.01$).



Water. air. and sand temperature during incubation period of clutch E.

VADOO PILOT PROJECT FOR
SEA TURTLE AND MARINE SPECIES