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Summary of Sea Turtle Research in Virginia During 1979 and 1980: final report for NMFS contract #80 FAC 00004

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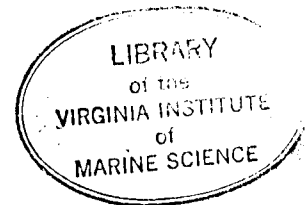
Summary of Sea Turtle Research
in Virginia During 1979 and 1980

(Final Report for NMFS Contract #80 FAC 00004).

Submitted by:

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J. A. Musick, Principal Investigator



INTRODUCTION

Directed research on the status of sea turtles in Virginia has been carried out by VIMS personnel since May 1979. Our efforts in 1979 (supported in-house) primarily comprised a documentation of sea turtle mortalities in the state. This work was expanded somewhat in 1980 thru a small Fellowship Stipend from N.M.F.S. to support the thesis work of Molly Lutcavage. In 1980 Molly analyzed the 1979 mortality data, continued to monitor strandings, and began a tagging program in cooperation with selected poundnet fishermen. Also in 1980 we began an evaluation of sea turtle nesting in Virginia with the support of another Fellowship stipend from the City of Danville Virginia and E.P.A. awarded to Richard Byles. I will provide a brief summary of each of these sub-projects below.

Mortality Studies

We began public awareness campaigns through the news media in May of 1979 and 1980 to alert the public as to the protected status of sea turtles and to our interest in receiving reports of stranded, dead turtles and of turtles sighted alive. In 1979 we documented strandings of 190 loggerhead turtles in Virginia. Most of these were loggerheads, 9 ridleys and 1 leatherback (See Appendix). In 1980 we documented 284 loggerheads, 10 ridleys, and 2 leatherbacks. The increase may be due to better coverage within our stranding network and greater public awareness

rather than higher turtle mortality. Molly Lutcavage is analyzing these data in detail, but our preliminary findings show that the size distribution of loggerheads stranded in Virginia in 1979 was different from that in 1980. In 1979 most of the strandings involved large sub-adults. In 1980 many more small juveniles were stranded. In addition the temporal and geographic patterns of strandings were quite different in the two years. These differences could be due to major differences in surface water temperature patterns in the two years.

What are the possible sources of these mortalities? We have identified five possible major sources:

1. boat collision
2. trawler net drownings
3. idiot-induced
4. disease
5. poundnet related

Mortalities caused by boat collision are indicated usually by obvious gashes on the head, carapace, and sometimes one of the limbs. A small percentage of turtle mortalities in Virginia can be attributed to boat collisions. Drowning in trawls is suspected as a principle cause of turtle mortality along the southern ocean beach of Virginia during the spring (May). Many turtles that stranded at Sandbridge and Back Bay Wildlife Refuge then had apparently drowned. There is trawler activity directly offshore and a short distance to the south off North Carolina, at that time. Trawling is strictly prohibited within Chesapeake Bay where most of Virginia turtle strandings occur, and thus cannot be a source of mortality within the Bay.

"Idiot-induced" mortality includes those mindless acts of mutilation such as gunshot wounds, slashed throats, amputated limbs, etc. perpetrated upon sea turtles by humans. This cause of mortality was substantial in 1979 but appeared to decline in 1980 probably due to greater public awareness about the protected status of sea turtles (and associated legal penalties).

When this study began we suspected that poundnets might be a principle source of turtle mortalities, but could not understand how because the hearts or pounds of these nets are open above and allow trapped turtles to surface and breathe. We have had excellent cooperation from poundnet fishermen during our study and have found that most fishermen that catch sea turtles remove them to the deck of their boat, and release them unharmed on the trip back to the dock. Thus, captured and released turtles are much less likely to be recaptured again than if they were immediately released next to the net in which they were captured. Preliminary results from a tagging study conducted with cooperating poundnet fishermen indicate that turtles handled in the above manner are not recaptured soon. The mechanism by which turtles are killed by poundnets has become apparent to us in 1980. Turtles become entangled and drown in the large-meshed leaders (or hedge) which stretches for hundreds of feet and leads to the net proper. Because these net leaders are several feet deep, only those turtles entangled in the uppermost meshes are apparent to an observer on the water surface.

After death as these turtles begin to decompose they become bloated with gases, and finally float to the surface as the rotting flesh tears free from the netting. This may explain why most of the stranded turtles we examine are extremely decomposed. Turtles do not become entrapped in all pound leaders. Mesh sizes of leaders vary and this may be one factor why some leaders catch turtles and others do not. Also particular nets may be more fatal than others of similar construction because of their location. Specific hydrographic conditions may favor turtle entrapment (strong tidal currents).

Dr. Richard Wolke, a pathologist at the University of Rhode Island with whom we are working believes that some turtle mortalities may be directly or indirectly caused by disease. He has found evidence of severe anemia and perhaps blood fluke infestation from dead loggerheads examined in Florida and from a few Virginia samples. An anemic and physically weakened turtle would be less able to avoid a trawl or a poundnet leader if in a strong current. Unfortunately most of our Virginia specimens are so decomposed upon stranding that established techniques used in autopsy and histopathology cannot be used to determine the state of health of the specimen before death.

What is the significance of these very large numbers of turtle mortalities in Virginia? Obviously we are concerned about the effects of these mortalities on the survival of the populations of these threatened or endangered species (particularly

the ridleys). But also the large number of loggerhead mortalities suggests to us that the standing stock of sub-adult loggerheads in the Chesapeake Bight is very high during the summer months. Reports of live individuals, our observations from aircraft overflights, and observations made by the U.R.I., C.E.T.A.P. program (Bob Shoop, personal communication) support the notion that the Chesapeake Bight is a major summer feeding area for young loggerheads, and indeed may be the major summer feeding area for turtles originating from colonies along the eastern seaboard of the U.S.

We feel it is quite important to determine where Virginia's turtles come from and also where they ultimately nest. Any successful conservation efforts must be aimed at defined breeding populations, and the temporal and geographic limits of these populations should be identified. We are taking several steps to attempt to answer these questions. First, Molly Lutcavage has taken several samples of encrusting barnacles from stranded turtles. These are being identified by Dr. Victor Zullo. (UNC-Wilmington) a barnacle systematist. Certain barnacle species are primarily tropical and oceanic, and others are coastal or even estuarine. Thus the barnacle fauna found on a turtle can give some information as to where it has been. In addition recent studies on oxygen isotopes found in the shells of barnacles have shown that these isotopes can be used to trace the recent thermal regimes in which such barnacles have grown. This method has been used to reconstruct whale

migration patterns. We are in contact with workers in California and have sent some of our barnacle samples to them for similar analysis. A major question that has arisen is where do our turtles spend the winter? Do they migrate south to Florida and perhaps the Caribbean, or do they simply move into the south-Atlantic Bight and hibernate where the bottom remains moderate all winter (10-15°C)? Specimens stranded along the ocean beach in May show two distinct patterns. Some turtles are dark in color, in poor condition and barnacle encrusted; others are brighter in color, in very good condition and relatively clean and free of barnacles. Have these turtles wintered in different areas? We have begun to try to determine the migratory pattern of Virginia sea turtles also with preliminary tagging experiments. So far this year cooperating poundnet fishermen have tagged and released approximately 80 turtles for us. We have two returns from these releases which suggest that loggerheads move up-Bay as summer progresses. Also one of our local fishermen captured a released ridley which had been tagged and released off Galveston Texas in the head-start program about one year ago. In addition to conventional tags, Richard Byles will begin some preliminary experiments using sonic tags on turtles leaving Chesapeake Bay this Fall.

Nesting Studies

Through a modest fellowship stipend from the City of Danville Virginia through the Environmental Protection Agency, Richard Byles has been preparing an evaluation of sea turtle nesting in Virginia. This study is based on a series of aircraft overflights made at one week intervals along the entire Virginia sea coast this summer. We are using methods similar to those established by N.M.F.S. for overflights in the southeast. So far this year no sea turtle nesting has been detected from the air. One loggerhead nesting has been documented at Sandbridge in Virginia Beach on 25 July 1980. This nest was located in a residential beach area with vehicular traffic. One hundred four eggs were exhumed within 12 hours and transferred by U.S.F.W.S. personnel to a protected hatching area on the nearby Back Bay Wildlife Refuge. The nest produced 90 healthy hatchling turtles on 29 September and 1 October 1980, which were measured and released at Back Bay on the beach. We are also examining all available historical records of sea turtle nesting in Virginia. Our preliminary findings are that loggerheads nest infrequently (less than 10 nests a year) on Virginia beaches both north and south of Chesapeake Bay. The barrier beach islands off the Eastern Shore of Virginia are and have been relatively inaccessible and wild. Because there does not appear to be major nesting activity there presently, it is highly unlikely that Virginia beaches ever served as a major

nesting location for sea turtles. The reason for this may lie not in the lack of a sufficient warm weather period for development or suitable beach habitat (both are present), but to the lack of adequate Sargassum nursery areas offshore. Baby loggerheads striking east offshore would not find substantial windrows of floating Sargassum for at least 120 miles. Also they would have to race falling sea water temperatures as autumn progressed. In addition, in our latitude (37°N) even the Sargassum in the Gulf Stream dies during the cold months because low air temperatures kill the exposed gas bladders.

In summary, loggerhead sea turtles are abundant in and off Virginia in the summer. These turtles are probably derived from nesting areas to the south. Ridley turtles are much more common in our waters than previously suspected. Both species are subjected to high mortalities from many different sources. Poundnet leaders appear to be a primary source of mortalities for loggerheads. (The ridley may also die in gill nets, but these flimsy monofilament nets probably offer little problem for loggerheads). We feel that in the future that it will be important to continue study of stranding mortalities in order to further document species composition, size frequency information, and cause of death. Dr. Wolke has provided us with a detailed protocol for autopsy, but we received this after most of our "fresh" material stranded (mid-May). In 1981 we will be better prepared to collect material for histopathology. In

addition we feel that further research is warranted on the poundnet leader problem. Detailed examination of mesh size and construction as well as in-situ current measurements near selected nets should help us determine what factors are important in turtle entrapment.

Also, we propose to increase our efforts with our conventional tagging program and, through the efforts of Richard Byles, to develop a sonic tagging study to define local turtle movements in the vicinity of poundnets in Chesapeake Bay and to follow the departure of turtles from the Bay in the autumn. Finally, we are exploring the possibility of arranging the use of a few satellite-monitored radio tags on large sub-adult loggerheads as they begin their autumn migration.

Negotiations are currently underway with the U.S. Fish and Wildlife Service, Office of Endangered Species for funding of the tagging studies.

APPENDIX

VIRGINIA MARINE TURTLES 1979/1980

Explanation of print out:

Fieldnumbers All MT/ year series turtles were examined by qualified persons. Reliability excellent. Additional information available on dimensions of turtle and its condition.

___/s/79 turtles were reported by VIMS stranding form. These reports were filed most often by military and city crews who had been instructed as to proper I.D. and measurement. Sex identifications may be questionable in some cases.

Species

CC	Caretta caretta
LK	Lepidochelys kempi
DC	Dermochelys coriacea
U	Unknown

Condition

fresh	carcass has no bloat or odor
mild	carcass with slight bloat or odor
adv	advanced decomposition
advp	advanced <u>plus</u> decomposition
flesh	flesh only; no hard parts
mum	mummy-turtle dried parts
bones	skeleton parts only
alive	.

(stranding forms)

1	little or no odor or bloat
2	bloated and foul odor present
3	advanced decom; parts only

CLC carapace length measured along curvature in centimeters.

OBS	FIELD#	DISCUR	SPECIES	SEX	COND	CLC
1	NT/1/80	12MAY80	CC	F	FRESH	73.0
2	NT/2/80	11MAY80	CC	F	FRESH	72.5
3	NT/3/80	13MAY80	CC	F	ADU	77.0
4	NT/4/80	20MAY80	CC	F	FRESH	71.5
5	NT/5/80	21MAY80	CC	F	ADU	78.5
6	NT/6/80	21MAY80	CC	F	FRESH	62.8
7	NT/7/80	21MAY80	CC	F	FRESH	62.0
8	NT/8/80	25MAY80	CC	F	ADU	.
9	NT/9/80	26MAY80	CC	F	ADU	.
10	NT/10/80	27MAY80	CC	F	ADU	.
11	NT/11/80	28MAY80	CC	F	MOD	58.6
12	NT/12/80	28MAY80	CC	F	MOD	71.0
13	NT/13/80	28MAY80	CC	F	MOD	82.0
14	NT/14/80	28MAY80	CC	F	MOD	55.0
15	NT/15/80	28MAY80	CC	F	MOD	31.8
16	NT/16/80	28MAY80	CC	F	ADU	.
17	NT/17/80	30MAY80	CC	F	ADU	.
18	NT/18/80	30MAY80	CC	F	ADU	.
19	NT/19/80	30MAY80	CC	F	ADU	.
20	NT/20/80	31MAY80	CC	F	ADU	106.0
21	NT/21/80	31MAY80	CC	F	ADU	58.5
22	NT/22/80	31MAY80	CC	F	ADU	.
23	NT/23/80	31MAY80	CC	F	ADU	76.0
24	NT/24/80	29MAY80	CC	F	FAIR	83.0
25	NT/25/80	31MAY80	CC	F	ADU	.
26	NT/26/80	26MAY80	CC	F	ADU	124.0
27	NT/27/80	01JUN80	CC	F	ADU	68.0
28	NT/28/80	01JUN80	CC	F	ADU	72.0
29	NT/29/80	01JUN80	CC	F	MOD	70.0
30	NT/30/80	01JUN80	CC	F	ADU	71.0
31	NT/31/80	01JUN80	CC	F	ADU	.
32	NT/32/80	02JUN80	CC	F	ADUP	.
33	NT/33/80	02JUN80	CC	F	MOD	.
34	NT/34/80	29MAY80	CC	F	FRESH	65.5
35	NT/35/80	29MAY80	CC	F	FRESH	.
36	NT/36/80	29MAY80	CC	F	ADU	73.0
37	NT/37/80	03JUN80	CC	F	ADU	76.0
38	NT/38/80	03JUN80	CC	F	ADU	71.1
39	NT/39/80	07JUN80	CC	F	ADU	89.0
40	NT/40/80	11JUN80	CC	F	ADU	.
41	NT/41/80	16JUN80	CC	F	MOD	53.5
42	NT/42/80	17JUN80	CC	F	MOD	85.0
43	NT/43/80	17JUN80	CC	F	ADU	58.0
44	NT/44/80	28JUN80	CC	F	ADU	83.0
45	NT/45/80	28JUN80	CC	F	MOD	64.0
46	NT/46/80	01JUL80	CC	F	MOD	71.0
47	NT/47/80	16JUL80	CC	F	ALIVE	71.1
48	NT/48/80	30MAY80	CC	F	ALIVE	51.8
49	NT/49/80	18JUL80	CC	F	FRESH	75.0
50	NT/50/80	27MAY80	CC	F	ALIVE	59.5
51	NT/51/80	29JUL80	CC	F	ALIVE	.
52	NT/52/80	31JUL80	CC	F	ADU	.
53	NT/53/80	31JUL80	CC	F	MOD	66.0
54	NT/54/80	25JUN80	CC	F	ADU	68.0
55	NT/55/80	17AUG80	CC	F	MOD	72.5
56	NT/56/80	17SEP80	CC	F	MOD	.
57	NT/57/80	24SEP80	CC	F	ADU	64.8
58	NT/58/80	04OCT80	CC	F	ADU	39.4

59	NT/59/80	07OCT80	CC	F	FRESH	70.0
60	NT/60/80	07OCT80	CC	F	ADU	.
61	NT/61/80	26OCT80	CC	F	ADUP	.
62	NT/62/80	16OCT80	CC	F	ALIVE	43.0
63	NT/63/80	17AUG80	CC	F	ADVP	.
U ADUP						
64	NT/64/80	31OCT80	CC	F	ALIVE	68.6
65	NT/65/80	31OCT80	CC	F	ALIVE	76.2
66	75/S/80	12APR80	CC	F	ALIVE	55.9
67	100/S/80	05MAY80	CC	F	ALIVE	92.0
68	73/S/80	16MAY80	CC	F	ALIVE	61.0
69	1/S/80	17MAY80	CC	F	ALIVE	56.0
70	2/S/80	18MAY80	CC	F	ALIVE	67.3
71	3/S/80	20MAY80	CC	F	ALIVE	71.1
72	107/S/80	23MAY80	CC	F	ALIVE	51.0
73	4/S/80	23MAY80	CC	F	ALIVE	46.0
74	5/S/80	23MAY80	CC	F	ALIVE	71.0
75	6/S/80	23MAY80	CC	F	ALIVE	71.0
76	7/S/80	23MAY80	CC	F	ALIVE	76.2
77	108/S/80	24MAY80	CC	F	ALIVE	39.0
78	.	.	CC	F	ALIVE	91.0
79	8/S/80	25MAY80	CC	F	ALIVE	75.0
80	10/S/80	26MAY80	CC	F	ALIVE	80.0
81	12/S/80	27MAY80	CC	F	ALIVE	91.5
82	11/S/80	27MAY80	CC	F	ALIVE	91.5
83	110/S/80	27MAY80	CC	F	ALIVE	107.0
84	112/S/80	28MAY80	CC	F	ALIVE	76.1
85	111/S/80	28MAY80	CC	F	ALIVE	59.2
86	109/S/80	28MAY80	CC	F	ALIVE	69.0
87	13/S/80	28MAY80	CC	F	ALIVE	61.0
88	14/S/80	28MAY80	CC	F	ALIVE	91.5
89	99/S/80	28MAY80	CC	F	ALIVE	107.0
90	15/S/80	28MAY80	CC	F	ALIVE	91.5
91	16/S/80	29MAY80	CC	F	ALIVE	107.0
92	113/S/80	29MAY80	CC	F	ALIVE	91.5
93	33/S/80	29MAY80	CC	F	ALIVE	107.0
94	20/S/80	29MAY80	CC	F	ALIVE	91.5
95	30/S/80	30MAY80	CC	F	ALIVE	56.0
96	31/S/80	01JUN80	CC	F	ALIVE	91.0
97	32/S/80	01JUN80	CC	F	ALIVE	182.9
98	38/S/80	01JUN80	CC	F	ALIVE	59.8
99	99/S/80	03JUN80	CC	F	ALIVE	107.0
100	103/S/80	03JUN80	CC	F	ALIVE	69.0
101	35/S/80	04JUN80	CC	F	ALIVE	71.1
102	34/S/80	04JUN80	CC	F	ALIVE	76.2
103	114/S/80	04JUN80	CC	F	ALIVE	76.0
104	17/S/80	04JUN80	CC	F	ALIVE	97.0
105	115/S/80	05JUN80	CC	F	ALIVE	62.0
106	116/S/80	05JUN80	CC	F	ALIVE	91.0
107	117/S/80	05JUN80	CC	F	ALIVE	102.0
108	118/S/80	05JUN80	CC	F	ALIVE	92.0
109	19/S/80	05JUN80	CC	F	ALIVE	59.0
110	78/S/80	05JUN80	CC	F	ALIVE	62.0
111	119/S/80	05JUN80	CC	F	ALIVE	91.0
112	39/S/80	10JUN80	CC	F	ALIVE	102.0
113	79/S/80	06JUN80	CC	F	ALIVE	92.0
114	80/S/80	06JUN80	CC	F	ALIVE	59.0
115	81/S/80	06JUN80	CC	F	ALIVE	62.0
116	22/S/80	06JUN80	CC	F	ALIVE	87.0
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119	51/S/80	06JUN80	CC	F	ALIVE	.
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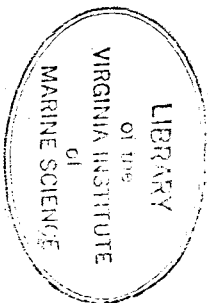
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 184 93/5/80 30JUN80 CC U U 2 .
 185 72/5/80 30JUN80 CC U U 3 46.0
 186 76/5/80 01JUL80 CC U 1 81.3

OBS	FIELDNR	DISCUR	SPECIES	SEX	COND	CLC
125	12/5/80	09JUN80	CC	U	1	76.0
126	83/5/80	09JUN80	CC	U	1	60.4
127	24/5/80	09JUN80	CC	U	2	71.0
128	82/5/80	09JUN80	CC	U	1	71.0
129	40/5/80	09JUN80	CC	F	2	85.0
130	41/5/80	09JUN80	CC	F	2	86.0
131	42/5/80	09JUN80	CC	U	2	67.0
132	25/5/80	09JUN80	CC	U	2	.
133	26/5/80	09JUN80	CC	U	2	.
134	27/5/80	09JUN80	CC	U	2	71.0
135	29/5/80	09JUN80	CC	U	1	76.0
136	39/5/80	10JUN80	CC	F	1	102.0
137	85/5/80	10JUN80	CC	U	2	.
138	84/5/80	10JUN80	CC	U	1	55.0
139	61/5/80	10JUN80	CC	U	1	96.5
140	63/5/80	11JUN80	CC	U	1	61.0
141	43/5/80	11JUN80	CC	U	1	91.0
142	52/5/80	11JUN80	CC	F	2	91.4
143	121/5/80	12JUN80	CC	U	1	55.9
144	122/5/80	12JUN80	CC	U	1	25.3
145	86/5/80	12JUN80	LK	U	2	68.6
146	87/5/80	12JUN80	CC	U	1	68.1
147	88/5/80	12JUN80	CC	U	1	45.7
148	123/5/80	12JUN80	CC	U	1	84.0
149	45/5/80	14JUN80	CC	U	2	60.0
150	89/5/80	13JUN80	CC	U	2	106.7
151	67/5/80	13JUN80	CC	U	2	62.2
152	62/5/80	13JUN80	CC	U	2	.
153	103/5/80	13JUN80	CC	U	2	76.2
154	53/5/80	13JUN80	CC	U	2	66.0
155	50/5/80	13JUN80	CC	U	2	91.4
156	124/5/80	13JUN80	CC	F	2	63.0
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159	48/5/80	13JUN80	CC	U	2	102.0
160	49/5/80	13JUN80	CC	F	2	61.0
161	44/5/80	14JUN80	CC	U	1	91.0
162	96/5/80	15JUN80	CC	U	2	66.0
163	54/5/80	17JUN80	CC	U	2	76.2
164	55/5/80	17JUN80	CC	U	2	.
165	56/5/80	17JUN80	U	U	2	61.0
166	57/5/80	17JUN80	CC	U	2	66.0
167	90/5/80	17JUN80	CC	U	2	74.0
168	58/5/80	17JUN80	CC	U	2	91.4
169	125/5/80	17JUN80	CC	F	1	76.2
170	126/5/80	17JUN80	CC	U	1	91.4
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174	68/5/80	19JUN80	CC	U	2	61.0
175	127/5/80	20JUN80	CC	U	1	21.6
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177	71/5/80	21JUN80	CC	U	2	50.0
178	91/5/80	23JUN80	CC	U	2	83.8
179	69/5/80	23JUN80	CC	U	2	.

OBS	FIELDNR	DISCUR	SPECIES	SEX	COND	CLC
187	94/5/80	02JUL80	CC	F	2	107.0
188	92/5/80	09JUL80	CC	F	2	75.0
189	77/5/80	06JUL80	CC	F	2	89.0
190	102/5/80	16JUL80	CC	U	1	84.0
191	101/5/80	20JUL80	CC	U	2	.
192	104/5/80	30JUL80	CC	U	2	.
193	97/5/80	14JUL80	CC	U	1	61.0
194	98/5/80	14JUL80	CC	U	1	61.0
195	105/5/80	01AUG80	CC	F	2	122.0
196	106/5/80	11AUG80	CC	U	1	71.0
197	124/5/80	21AUG80	CC	U	1	82.5
198	125/5/80	21AUG80	CC	U	2	71.0
199	126/5/80	23AUG80	LK	U	1	36.0
200	127/5/80	04SEP80	CC	U	1	60.0
201	128/5/80	06SEP80	U	U	1	95.0
202	129/5/80	06SEP80	CC	U	1	.
203	130/5/80	08SEP80	CC	U	3	.
204	131/5/80	13OCT80	LK	U	1	43.2
205	138/5/80	08NOV80	CC	U	2	91.0
206	139/5/80	14NOV80	CC	U	1	60.0
207	140/5/80	14NOV80	CC	U	1	80.0
208	141/5/80	19SEP80	CC	U	2	.
209	131/5/80	13JUL80	CC	U	2	.
210	132/5/80	01JUL80	CC	U	3	.
211	142/5/80	03DEC80	CC	U	2	71.1
212	143/5/80	15AUG80	CC	U	1	.
213	9/5/80	25MAY80	U	U	1	.
214	MT/1/79	22MAY79	CC	U	MOD	81.3
215	MT/2/79	21MAY79	CC	ADU	MOD	67.3
216	MT/3/79	24MAY79	CC	U	MOD	76.2
217	MT/4/79	25MAY79	CC	U	ADU	85.1
218	MT/5/79	28MAY79	CC	U	ADU	77.5
219	MT/6/79	30MAY79	CC	U	MOD	71.0
220	MT/7/79	30MAY79	CC	U	MOD	82.5
221	MT/8/79	02JUN79	CC	F	ADU	92.0
222	MT/9/79	02JUN79	CC	F	MOD	94.0
223	MT/10/79	03JUN79	LK	U	FRESH	41.5
224	MT/11/79	03JUN79	CC	F	MOD	89.0
225	MT/12/79	08JUN79	CC	U	MILD	77.5
226	MT/13/79	11JUN79	LK	U	ADU	32.0
227	MT/14/79	13JUN79	CC	U	MOD	76.0
228	MT/15/79	14JUN79	CC	U	FLESH	.
229	MT/16/79	15JUN79	CC	U	ADUP	74.0
230	MT/17/79	15JUN79	CC	U	ALIVE	74.0
231	MT/18/79	17JUN79	CC	F	MOD	87.0
232	MT/19/79	17JUN79	CC	U	ADUP	69.5
233	MT/20/79	18JUN79	CC	U	MOD	161.0
234	MT/21/79	18JUN79	CC	U	ADUP	76.0
235	MT/22/79	19JUN79	CC	U	ADUP	51.0
236	MT/23/79	19JUN79	CC	F	MOD	116.5
237						.
238	MT/24/79	21JUN79	CC	U	MOD	62.8
239	MT/26/79	24JUN79	CC	U	MILD	64.2
240	MT/27/79	24JUN79	CC	U	MILD	47.7
241	MT/28/79	29JUN79	CC	U	MOD	63.0
242	MT/29/79	29JUN79	CC	U	MILD	94.0

END '80

1979



243	MT/30/79	29JUN79	CC	U	MILD	66.1
244	MT/31/79	29JUN79	CC	U	ADU	63.0
245	MT/32/79	29JUN79	CC	U	ADU	75.2
246	MT/33/79	30JUN79	CC	U	MOD	78.5
247	MT/34/79	30JUN79	CC	U	MOD	78.0
248	MT/35/79	30JUN79	CC	U	MOD	78.0

302	14/S/79	18JUN79	CC	U	2	116.8
303	15/S/79	18JUN79	CC	U	1	121.9
304	16/S/79	20JUN79	CC	U	2	73.7
305	17/S/79	20JUN79	CC	F	1	105.4
306	18/S/79	23JUN79	CC	U	1	63.5
307	19/S/79	25JUN79	CC	F	1	91.0
308	20/S/79	25JUN79	CC	U	1	73.7
309	21/S/79	25JUN79	CC	U	2	70.0
310	22/S/79	26JUN79	CC	U	1	82.6

OBS	FIELDNBR	DISCUR	SPECIES	SEX	COND	CLC
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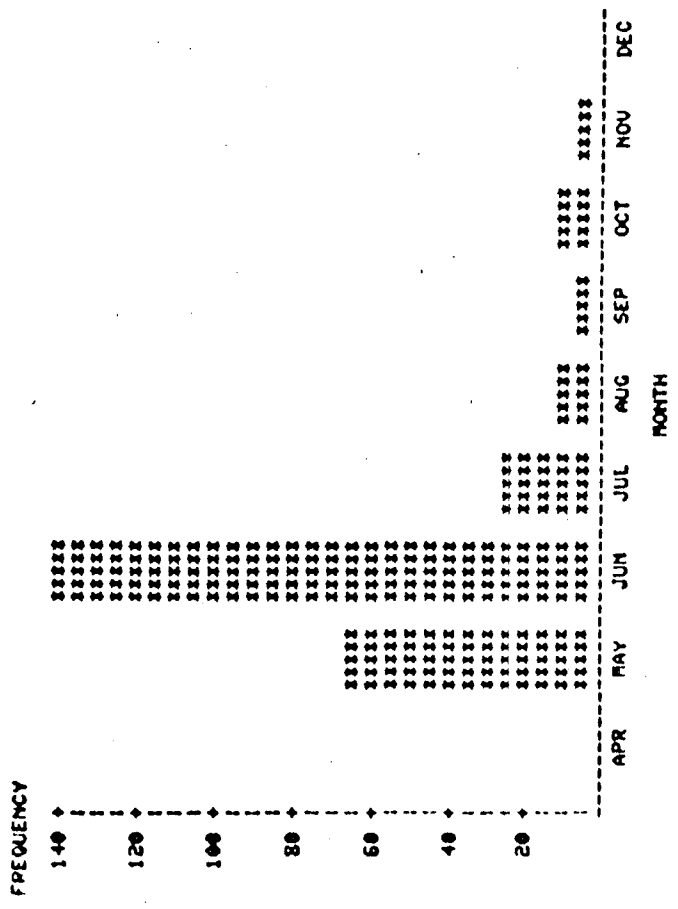
249	MT/36/79	03JUL79	CC	U	ADUP	.
250	MT/37/79	10JUL79	CC	U	ADU	70.0
251	MT/38/79	16JUL79	CC	U	MOD	70.0
252	MT/39/79	16JUL79	CC	U	MOD	63.2
253	MT/40/79	24JUL79	CC	U	ADUP	74.1
254	MT/41/79	24JUL79	CC	U	MOD	66.7
255	MT/42/79	25JUL79	CC	U	ADUP	.
256	MT/43/79	08AUG79	CC	U	MOD	69.0
257	MT/44/79	01JUN79	CC	U	MOD	68.0
258	MT/45/79	01JUN79	CC	U	ADU	76.0
259	MT/46/79	01JUN79	CC	U	ADUP	71.0
260	MT/47/79	01JUN79	CC	U	MILD	56.0
261	MT/48/79	06JUN79	CC	F	MILD	91.0
262	MT/49/79	03JUN79	CC	U	MOD	.
263	MT/50/79	18JUN79	CC	U	ADU	91.0
264	MT/51/79	14JUN79	CC	F	ADU	.
265	MT/52/79	.	.	.	.	.
266	MT/53/79	12JUN79	LK	U	MILD	61.6
267	MT/54/79	15JUN79	CC	U	ADU	74.0
268	MT/55/79	03SEP79	CC	U	MOD	64.0
269	MT/56/79	04SEP79	CC	H	MOD	.
270	MT/57/79	18SEP79	CC	U	FRESH	78.7
271	MT/58/79	26SEP79	CC	U	MILD	70.0
272	MT/59/79	15OCT79	CC	F	ALIVE	93.3
273	MT/60/79	27OCT79	LK	U	MOD	41.9
274	MT/61/79	07NOV79	LK	U	MILD	36.0
275	MT/62/79	20NOV79	CC	U	FRESH	.
276	MT/63/79	02NOV79	CC	U	ADU	63.5
277	MT/64/79	02NOV79	CC	U	MILD	58.4
278	MT/65/79	26AUG79	CC	H	ADU	.
279	MT/66/79	17JUN79	CC	U	FLESH	.
280	MT/67/79	.	.	.	.	.
281	MT/68/79	18JUN79	CC	U	BONES	.
282	MT/69/79	27JUN79	CC	U	FLESH	64.0
283	MT/70/79	29JUN79	CC	U	ADU	.
284	MT/71/79	16JUL79	CC	U	FLESH	.
285	MT/72/79	18JUN79	CC	U	ADUP	.
286	MT/73/79	28JUN79	CC	U	MOD	.
287	MT/74/79	16JUN79	CC	U	ADUP	.
288	MT/25/79	25JUN79	LK	U	MUM	42.5
289	1/S/79	09JUN79	CC	U	2	.
290	2/S/79	19JUN79	U	U	ALIVE	.
291	3/S/79	06JUN79	CC	U	U	.
292	4/S/79	06JUN79	U	U	ALIVE	.
293	5/S/79	02JUN79	CC	U	MOD	.
294	6/S/79	06JUN79	CC	U	MOD	105.0
295	7/S/79	12JUN79	CC	U	1	61.6
296	8/S/79	12JUN79	CC	U	1	64.8
297	9/S/79	15JUN79	CC	U	1	71.1
298	10/S/79	18JUN79	CC	U	2	66.0
299	11/S/79	18JUN79	LK	U	1	30.5
300	12/S/79	18JUN79	CC	U	2	121.9
301	13/S/79	18JUN79	CC	U	2	86.3

OBS	FIELDNBR	DISCUR	SPECIES	SEX	COND	CLC
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311	23/S/79	26JUN79	CC	U	1	58.4	
312	24/S/79	26JUN79	CC	U	3	70.0	
313	25/S/79	27JUN79	CC	U	1	76.2	
314	26/S/79	27JUN79	CC	U	2	55.9	
315	27/S/79	02JUL79	U	U	1	.	
316	28/S/79	02JUL79	U	U	1	.	
317	29/S/79	02JUL79	CC	U	2	76.2	
318	30/S/79	03JUL79	CC	U	2	61.0	
319	31/S/79	04JUL79	CC	U	2	.	
320	.	.	.	.	.	.
321	32/S/79	.	CC	U	U	.	
322	33/S/79	05JUL79	CC	U	2	61.0	
323	34/S/79	06JUL79	CC	U	1	61.0	
324	35/S/79	08JUL79	CC	U	1	71.1	
325	36/S/79	06JUL79	CC	U	1	66.0	
326	37/S/79	11JUL79	CC	U	1	101.6	
327	38/S/79	11JUL79	CC	U	1	91.4	
328	39/S/79	13JUL79	CC	F	1	58.4	
329	40/S/79	16JUL79	CC	U	1	78.7	
330	41/S/79	17JUL79	CC	U	2	.	
331	.	.	.	.	.	.
332	42/S/79	18JUL79	CC	U	2	71.1	
333	43/S/79	18JUL79	CC	F	2	85.0	
334	44/S/79	01AUG79	CC	U	2	74.9	
335	45/S/79	01AUG79	U	U	3	.	
336	46/S/79	01AUG79	CC	U	U	ALIVE	91.0
337	47/S/79	04AUG79	U	U	3	.	
338	48/S/79	05AUG79	CC	F	1	91.4	
339	49/S/79	06AUG79	CC	U	1	81.2	
340	50/S/79	06AUG79	CC	U	2	71.1	
341	51/S/79	07AUG79	CC	F	2	91.4	
342	52/S/79	20AUG79	CC	U	1	38.4	
343	53/S/79	27AUG79	CC	U	2	.	
344	54/S/79	27AUG79	CC	U	2	.	
345	55/S/79	27AUG79	CC	U	2	.	
346	56/S/79	11SEP79	CC	U	2	77.5	
347	57/S/79	12SEP79	CC	F	2	122.0	
348	58/S/79	29SEP79	U	U	1	61.0	
349	59/S/79	29SEP79	CC	F	1	107.0	
350	60/S/79	.	.	.	.	.
351	61/S/79	27SEP79	CC	F	1	91.4	
352	62/S/79	27SEP79	U	F	1	182.9	
353	63/S/79	01OCT79	CC	F	2	91.4	
354	64/S/79	01OCT79	CC	F	1	106.7	
355	65/S/79	03OCT79	U	U	2	45.7	
356	66/S/79	05OCT79	U	U	1	67.3	
357	67/S/79	20OCT79	CC	U	1	58.4	
358	68/S/79	25OCT79	CC	U	1	66.0	
359	69/S/79	25OCT79	CC	U	1	71.1	
360	70/S/79	29OCT79	CC	U	1	73.7	
361	71/S/79	01NOV79	CC	U	1	61.0	

VIRGINIA MARINE TURTLES BY MONTH 1980

FREQUENCY BAR CHART

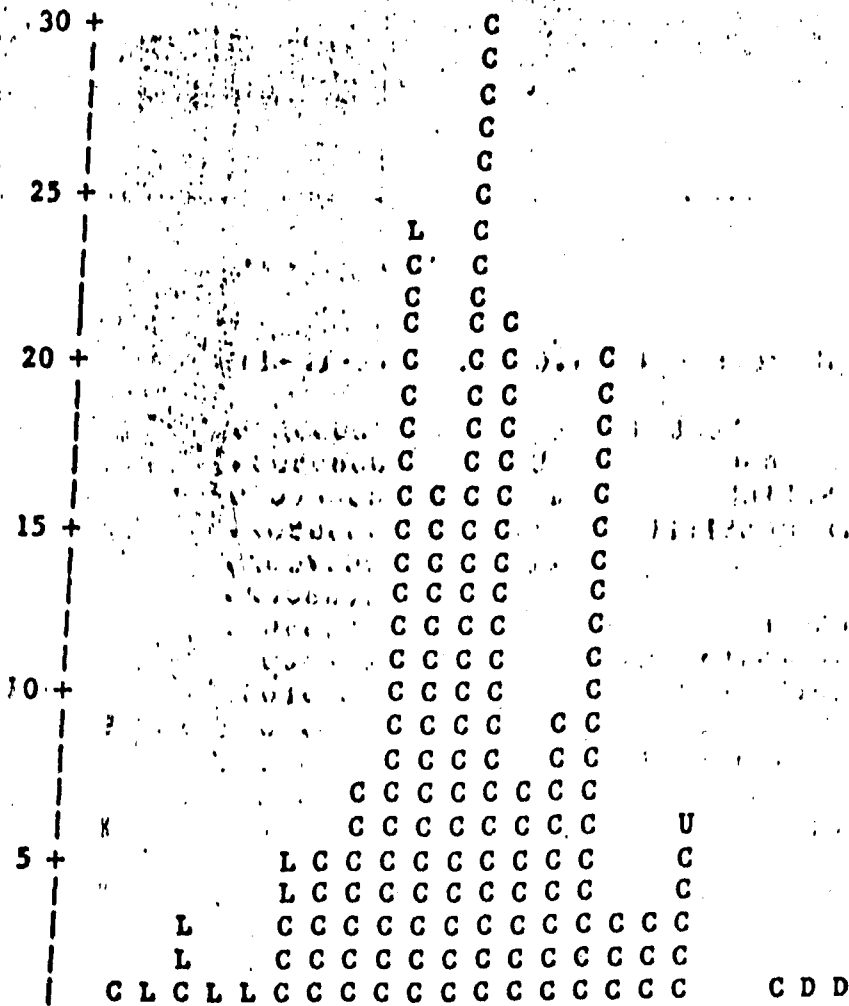


FREQUENCY BAR CHART

VIRGINIA TURTLES 1980

FREQUENCY

CARAPACE LENGTH (Curvature)
in centimeters.



1 1 1 1 1 1
 1 2 2 3 3 4 4 5 5 6 6 7 7 8 8 9 9 0 0 1 1 2 2 3 *over*
 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0

CLC MIDPOINT

SYMBOL	SPECIES	SYMBOL	SPECIES	SYMBOL	SPECIES
L	LK	C	CC	D	DC
		U	U		

400r copy

SEATURTLE STRANDINGS 1979 Part 2 *

* the following strandings have been reported to VIMS by phone or letter. No additional information is available. Duplicate reports have been deleted.

<u>DATE</u>	<u>SPECIES</u>	<u>NUMBER</u>	<u>LOCATION</u>	<u>ZONE</u>	<u>COMMENTS</u>
4 June 79	CC	1	New Pt. light	8	
	CC	1	Cuba Is. Bena	7	
	CC	1	Ft. Story	3	
	CC	1	Grandview Beach	6	
	?	1	Norfolk Int. T.	5	
	CC	2	Buckroe B.	6	
	CC	1	Seashore S.P.	3	
5 June	CC	1	Buckroe Pier 1	6	
	CC	1	New Pt. light	8	
6 June	CC	1	York River	7	near marker 16YR
	?	1	Ches. BBT isl.	15	
(28 May-6 June)	CC	4-6	Cuba Pines, Y.R.	7	Dr. McComb report
9 June	CC	1	York River	7	T. Dillon VIMS
11 June	CC	1	25th St. Va. B.	3	
14 June	CC	1	Mouth of L. Wic.	9	SWCB
20 June	CC	2	Ft. Monroe	6	P. Sprock, naturalist
26 June	CC	1	Ocean View	4	city crew
	LK (likely)	1	Seashore S.P.	3	park naturalist
	CC	1	Va. Beach	3	
27 June	CC	1	New Pt. light	8	
	CC	1	3rd St. Buckroe	6	
28 June	CC	1	Va. Beach	3	
	CC	2	York Pt.	6	
	CC	1	Oxford Beach MD	13+	CBI
29 June	CC	1	Buckroe Beach	6	
30 June	LK	1	Pd. net York R.	7	D. Dulaley VIMS
(6 June-10 July)	CC	5	Allens Is. Bena	7	Dr. McComb
8 July	CC	1	Back & Poquoson Rivers	6	Dr. Hugget, VIMS
11 July	? (large)	1	Potato Neck	9	VMRC
4 Aug	CC	1	Hampton Creek	6	resident
1 Aug	CC	2	Big Island York	7	Dr. McComb
26 Aug	CC	1	Paramore Is.	1	TNC
???	DC	1	Seashore S.P. Kendel St.	3	6 ft. est. lng.
TOTAL		45 + 1			

Species CC Caretta caretta
 LK Lepidochelys kempi
 DC Dermochelys coriacea

SEATURTLE STRANDINGS 1980 Part 2 *

*the following strandings have been reported to VIMS by phone or letter. No additional information is available. Duplicate reports have been deleted.

<u>DATE</u>	<u>SPECIES</u>	<u>NUMBER</u>	<u>LOCATION</u>	<u>ZONE</u>	<u>COMMENTS</u>
5 May	CC	1	s. end Smith Is.	1	
	CC	1	Rudee Inlet	3	app. 100lbs
14May	CC	1	n. end Cobb Is.	1	
	?	1	Buckroe Beach	6	
16May	CC	1	Paramore Is.	1	USCG
17May	CC	1	Paramore Is.	1	USCG
21May	CC	1	False Cape S.P.	2	
23May	CC	1	Sting Ray Pt.	9	
24May	CC	1	Fishermans Is.	15	
	CC	2	Sandbridge	2	
16May	CC	1	Ware Neck	8	
27May	CC	1	Great Neck Va.B.	3	
	CC	6	Poquoson flats	6	all dead in pd VMRC reports
28May	CC	2	Seashore St.P.	3	one in pd. net
30May	?	1	Hog Island	1	
	CC	3	Poquoson area	6	VMRC
31May	CC	1	Fort Story	3	
	CC	2	New Point Light	8	in pd. net w/
	CC	3	CBBT east end	15	floaters
	CC	2	Buckroe Beach	6	
	CC	1	Grandview Beach	6	
Subtotal		34			
6June	CC	1	Va. Beach	3	300lbs.
7June	?	1	White Marsh	9	SWCB
	CC	1	Haven Beach	9	
	CC	1	W. Ocean View	4	
	CC	1	Lynhaven Shores	3	
	?	1	Goodwyn Island	6	
9June	?	1	Smith's Beach	13+	
14June	CC	1	Mosquito Point near Windmill Pt.	11	
	CC	1	Silver Beach, E.S.	15	
	CC	1	New Pt. Cft. campgrd.	9	
13June	CC	2	York Spit channel	6	floaters
15June	CC	1	Haven Beach	9	
16June	CC	1	N.end Grandview	6	MEL
	CC	1	coal pier Norfolk	4	
	CC	1	Shacklefords York R.	7	
17June	?	1	n. end Hog Is.	1	RB
	CC	1	s.end False Cape	2	RB aerial
	CC	1	NC border False Cape	2	RB
18June	CC	1	CBBT	15	
	CC	2	Mobjack Bay	8	

<u>DATE</u>	<u>SPECIES</u>	<u>NUMBER</u>	<u>LOCATION</u>	<u>ZONE</u>	<u>COMMENTS</u>
23 June	CC	1	New Pt. Light	8	
26 June	CC	2	Bavon Beach	9	
	CC	1	Rudee Inlet	3	
	CC	1	CBBT 4th is.	15	
28 June	CC	2	Shipshoal inlet	1	
	CC	1	mid Hog Island	1	
	CC	1	St. George's Potomac River	12	
June Subtotal		<u>31</u>			
1 July	?	1	Newport News	4	
	CC	1	Reedville		
2 July	CC	1	Mumford Island	7	
5 July	CC	1	Gwynns Island	9	
	?	1	Newport News dry dock	4	
	CC	3	Back River G.V.	6	
8 July	CC	1	Bay side E.S.	15	
9 July	CC	1	New Point Comfort	9	USCG
	LK (likely)	1	New Point Comfort	9	USCG
11 July	CC	1	mouth of East R.	8	
13 July	?	1	Wicomico, York R.	7	
15 July	CC	1	East River M.B.	8	
16 July	?	1	Church Creek Hampton	6	
30 July	CC	1	Seashore St. Park	3	
	CC	1	Fisherman's Island	15	
	CC	1	York River	7	crab pot line
July Subtotal		<u>18</u>			
August through December Subtotal		<u>0</u>			
Total reported turtles		<u>83</u>			

SEA TURTLE STRADDLING / CAPTURE ZONES 1-15

