ANNUAL PROJECT REPORT

Kiawah Island Turtle Patrol
2003

Assembled by Jack Hamilton

I. Nesting

A. Coverage

1. Nesting teams patrolled the beach each morning at first light in a four-wheel-drive Dodge Dakota truck with extended cab.

2. Each nesting team consisted of a driver and usually three other volunteers. A team was on duty for four consecutive days and on those days patrolled the full length of the beach, this year a distance of about nine miles. Volunteers served one term of four days each, and drivers two such terms.

B. Locating/Relocating

1. Upon locating a crawl, the team made a visual analysis of the site, noting the incoming and outgoing crawls, and using the five standard nest criteria. When the most likely nest position had been determined, the driver (or sometimes another experienced person) carefully probed the area using a standard probe. When a soft area was located, the presence of eggs was verified by carefully digging with the hands.

2. A nest was relocated only if it was a) seaward of the April spring high tide line, which had been marked at that time by the numbered distance posts, located at 0.2 mile intervals, and by white posts midway between these distance posts; b) in an area of heavy foot traffic; or c) in the zones at the extreme ends of the island, which experience had shown to be subject to a fatally high water table in the event of heavy rains. The coincidence of strong storms and high tides during the past two years caused severe erosion at the eastern end of the island causing the total loss of a number of nests from that area. During the year in 2002, the policy was adopted of relocating all nests from the two miles at the eastern end to the areas west of the Kiawah Island Beach Club, This policy was continued this year..

3. If possible, the artificial nest location was chosen near the original nest site, above the marked spring tide line, on a gently sloping dune face, and in an area as free as possible of vegetation. Nests relocated from the erosion areas at the east end were placed in the nearby zones.

C. Methods of marking nests

1. Each nest was marked with a 2”x2”x 4’ post, consecutively numbered and located two feet to the east of the nest center on a line parallel to the shore. The top of each post was painted orange and carried a laminated notice: “Turtle Nest. Do Not Disturb”.

2. On the back of the post was marked the date the nest was found, and any other pertinent information was recorded in a permanent notebook.

3. If the analysis of the crawl suggested that a nest had been laid but none could be located by probing, the most likely spot was marked by a 1”x 2”x 18” numbered and dated stake, painted orange on top and carrying the same laminated notice.

D. Nest monitoring methods

1. Nests were monitored daily by the nesting patrol until the time that hatching patrols began their checking, and after that by the hatching patrols themselves.

2. If any depredation was observed, a count of the number of eggs destroyed and the identity of the predator was recorded.

3. The date and appraisal of the extent of any over wash was noted.

II. Hatching

A. Determining emergence activity

1. Fifty days after the nest was laid, the hatch patrols began checking the nest daily, usually beginning at dawn. These foot patrols also watched for wild nests as well as for predation of any nests along the route.

2. Hatching of a nest was indicated by hatchling tracks coming from the nest. In the absence of visible tracks because of wind or rain, the exit crater could often be seen. A red flag was placed behind the exit hole. If emergence was not detected, an inventory of the nest was made after 75 or more days from the date the nest was laid.

B. An attempt was made to inventory all nests. At least three days after hatching was seen, the team members carefully dug down into the nest by hand – often wearing rubber gloves for protection. A count was made of hatched eggshells, unhatched eggs, dead hatchlings and live hatchlings.

C. Nest inventories usually were performed during hatching patrols that began soon after dawn.

III. Problems

A. Predators

1. Predators were principally raccoons, ghost crabs, ants and possibly a fox.

2. First night predation resulted in the destruction of 1026 eggs from 18 nests by raccoons and approximately 90 eggs ` by ghost crabs.

3. At hatching/emergence, there were a total of eight nests predated by raccoons and 14 nests were at least partially destroyed by ants. Thirteen nests were partially predated by ghost crabs and possibly one by a fox.

4. All nests in nesting zones 10 and 11, the most easterly zones used, were covered by 4'x4' wire screens with 2"x 4" openings, held down by wooden pegs at four corners. A second screen of 18" x 18" hardware cloth attached by garden ties was usually employed.

B. Lighting

1. Only one lighting violation on a private property was reported and visited this year. The location was a vacant house listed for sale. Lights were left on by workmen or movers. Contact was made with the property owner and the matter was resolved. This situation had no impact on the property beach frontage.

2. A special problem was encountered this year because of the construction of a new hotel near the center of the island. During the period before the outside walls were in place, lights in all of the open areas were used for purposes of safety of the workers. We had discussions with the site manager about concerns that

these lights might cause serious problems especially during the emergence period of hatchlings.

On one occasion Charlotte Hope was present on the beach for an on-site training session and had a chance to observe the lights herself. Although we considered the possibility of relocating all nests near the construction site or erecting shields of black material along the top of the dune line, neither of these options seemed practical. In the end we all agreed that these lights were fairly dim and at a considerable distance from the beach and therefore did not constitute a serious problem.

However, on days when the concrete slabs for the floors were being poured, two tall overhead booms fitted with very large and bright floodlights lit the working areas, sometimes well into the night. These may have deterred some turtles during the nesting season (though there was no indication of a high incidence of false crawls in that area) but fortunately the floors were all poured before hatching began. No problems with disoriented hatchlings in this area were reported.

C. Overwash and erosion

1. Although there continued to be erosion in the unstable east end of the island this year, our policy of relocating all nests out of that region was completely successful in avoiding damage to nests. No cases of overwash were reported. We were particularly fearful that tides would be dangerously high as hurricane Isabel passed by, but that did not prove to be the case..

D. Crowd management

1. Observers during both nesting and hatching were generally considerate of the need not to interfere with the patrols. No other problems were encountered.

2. Usually the teams were large enough that one member could be talking to the observers while the other members completed the tasks required.

3. No general information was made available on nests due to emerge or be inventoried. When inquiries were made by phone (usually by friends or family of patrol members) that information was supplied.

E. Strandings

There were 12 strandings reported this year. Usually reports were made by the Town Beach Patrol, and most times the turtles were sighted during the patrol's first AM sweep of the beach. There were some sightings later in the day. Some reports were made by members of the nesting patrol as they made their tour of the beach. The first stranding was in April and the last one in August.

Two of the strandings were taken by DNR staff to Ft. Johnson for further examination. Ten of the strandings were identified as Loggerheads and two as Kemp Ridleys. Early strandings appeared to be diseased turtles, as heavy barnacle encrustation and significant weight loss was evident. In later strandings, it was more difficult to determine cause of death. Either there was little or no evidence to suggest a cause or else the carcasses showed extreme deterioration due to a combination of exposure to the elements and depredation by marine life.

Two members of the patrol were permitted by DNR to examine, report to Ft. Johnson and complete the required paperwork documenting type, size, location and final dispossession of the carcasses. The final step beforeburial by the Beach Patrol personnel was to spray paint the carpace in the event the remains were rediscovered.

Genetic sampling of the strandings began in June. Tissue samples were collected from each stranding and held for pickup by the Ft. Johnson staff. Two necropsies were performed on site by Charlotte Hope. One of these was a gravid, adult female. Cause of death could not be determined.

IV. Education

A. Types of educational programs conducted

Kiawah Island Resort sponsors two programs through the Nature Center that are presented by the Kiawah Island Turtle Patrol.

A slide presentation and talk about sea turtles, with a description of turtle patrol activities, was conducted weekly on Tuesdays at 6:00 PM from June 3 to August 26 at the Nature Center. Two members from the Turtle Patrol gave these talks, attended by from 5 to 25 guests and residents. Concerns about lighting and beach activity were also discussed.

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B. Types of printed materials produced

The Town of Kiawah Island produces a printed brochure, "THE LOGGERHEAD TURTLE", which is available to Visitors at the Town Hall, is distributed through the various rental agencies and is handed out by the turtle patrol to observers on the beach. (See attachment #1)

C. Types of media articles and TV spots produced

Web Sites

During turtle season, regular updates were provided on two web sites: www.WelcomeToKiawah.com and www.KiawahTurtles.com. (See attachments #2 and #3).

Articles

During the turtle season a monthly column on Kiawah's loggerheads appears in each edition of "Kiawah Island Talk". Talk is distributed to members of the Kiawah Property Owners Group. (See attachments #4 through #9).

D. Number of public awareness turtle walks/watches and hatchling emergences conducted

Another weekly program is a demonstration conducted on the beach at 7:30 AM one day a week. A faux nest is dug and eggs (ping-pong balls) are placed in it. A simulated crawl is dug on the beach to illustrate it's appearance. Following a description of nesting activity, the beach and nest markers, the nest is probed and the eggs removed, usually with help from the observers. An explanation of post-hatching activity of the hatchlings concluded the demonstration.

Two groups of members from the SC Aquarium were invited to observe nest hatching and/or evaluation in July. There were no viable nests to observe on the first visit, but a short turtle talk with slide show and beach walk were given at the Sandcastle Recreation Center. During the second visit we were able to dig a nest that was available to be evaluated and the protocol was observed. It was a successful nest, but no hatchlings were found. There were 25 members at each session.

V. Project Organization

A. Level of training

An operating committee of six experienced members of the patrol organized the operation for the year. Each of these six was responsible for some phase of the program.

Eighteen percent of the 104 volunteers (See attachment #10) were new this year. The more experienced members range from 3 to 15 years of experience. A new volunteer is always accompanied by at least one experienced patrol member, and learns by participating and studying the Guidelines.

B. Level of involvement

On nesting patrols all members are routinely watching for crawls, and all participate in the analysis of the crawl. Probing is done by the driver or occasionally by a highly experienced team member. All participate in moving eggs, under supervision of the driver. On hatching patrols a new volunteer is always accompanied by at least one experienced patrol member and learns to notice signs of emergence and to inventory nests by reading the guidelines and participating under supervision. Analysis of data and writing of the report was done by the six members of the operating committee.

VI. Concerns and Recommendations

A. Project concerns

The continued severe erosion of the beach at the eastern end is one major concern. The Town of Kiawah Island is in the process of applying for a permit to fill in the existing cut between the inland pond and the ocean and to make a new cut around the point to the Stono River. The hope is that this will ease the erosion problem.

Some volunteers are still concerned about what they view as an increasing infestation of nests by imported fire ants. Many simply will not dig in to inventory a nest if ants are present. This year we received a proposal from a graduate student at Clemson University to undertake a study of fire ants and the effectiveness of the bait Amdro in preventing damage to hatchlings. Our Governing Committee felt that little is known about the effect of this product itself on turtle hatchlings, and voted not to fund this study, which requested $5,000 in each of three years.

Another concern is the marked increase in first-night predation by raccoons.

B. Technical concerns and needs

Our program is generously supported by the Town of Kiawah, which fills our technical needs completely.

VII. Other Issues and Comments

This year is the first in which we have experienced a significant decrease in the number of volunteers. Undoubtedly the patrol is aging and some people have dropped out because of that. This has put an unusual burden on some of the more willing volunteers. We need to step up our efforts to recruit the new, younger people moving to the island.

VIII. Supplemental Information

Sections I through VII constitute the information required by SCDNR, according to the outline required by them. However, there are additional data and analyses of the year's results, which may be of interest to volunteers.

A. The Progress of the Year

The first nest this year was found on the morning of May 4th, the earliest since data have been kept. Indeed, it appeared for a time that the nesting pace was so high that we might surpass 1999, the record year with 263 nests. However, as seen from Fig. 1, which gives the progress of nesting for 1999, 2002 and 2003, the pace eventually dropped off, leading to a final total of 225, which is in fact second only to 1999. This same nest was the first to hatch, on July 19, 63 days later. The inventory of the last nest, #225, was completed on October 15, making the entire length of the season 164 days.

B. Incubation Time

In previous years, it has been true that the incubation periods of the earliest nests, which are laid in cooler weather, are longer than those of later nests, laid in the heat of June and July. That was expected to be the case this year, which had particularly low temperatures and considerable rain during May. The average incubation periods of the first twenty, the middle twenty and the last twenty nests were 66.67 days, 58.17 days and 57.1 days respectively. The average incubation period for the whole season was 58.93 days.

C. Clutch Size

It has also been noted in previous years that the clutch size was larger for the earliest nests in the season. What may seem a strange result is more reasonable in light of the fact that the same turtle may lay four or five nests during a season. The average clutch sizes for the first twenty, the middle twenty, and the last twenty nests were 126.26 eggs, 122.65 eggs and 109.36 eggs, respectively.

D. Distribution of Crawls

Fig. 2 gives the distribution of nests and false crawls among the 40 nesting zones. Zone #1 begins 0.4 mile east of the beach access at the Ocean Course, and zone #40 is at the west end of the island near the Kiawah River. Each zone is 0.2 mile long. A problem with the interpretation of these data is that the number of nests in any one zone is so small that it is uncertain whether the variations that are seen are real and significant or are merely the random fluctuations of small numbers. One way of approaching this problem is to add the numbers of nests in some number of adjacent zones. The results of such a treatment are shown in Fig. 3, for the total of five zones (thus the equivalent of one hatching zone). This graph indicates a maximum for zones 0 through 4, followed by a minimum just west of that and a steady increase building to a second maximum in zones 25 through 29 and a decrease west of that. Notice that the zone called 0 includes everything east of marker #1 and is therefore longer than any other zone. However, the peak at the east end of this graph cannot be attributed to this alone, for reference back to Fig. 2 shows high numbers of nests in all five of those zones.

A quantity called the nesting success, given by the ratio of nesting crawls to total craws, is plotted in Fig. 4. Only in 6 of the zones is the nesting success les than 50%.

E. Predation

Some comments need to be made about raccoon predation, which has increased noticeably this year. In 2001 and 2002 the raccoon activity was almost exclusively limited to zones 3 and 4, the easternmost zones in which nests were left in situ.

Consequently, screens were used in only those zones, except for the isolated cases of predation elsewhere along the beach. Since the policy this year from the beginning was to relocate all nests east of marker #10, we made the mistake of beginning the year without using screens at all. The raccoons outsmarted us. When there were no nests in zones 3 and 4, they simply moved west to zones 10 and 11. Beginning on May 17 there were 10 existing nests raided, all but one of which were in zones 10 and 11 (or, mistakenly, east of that). After the first week in June it became standard policy to screen all nests in zones 10 and 11. This stopped the raccoon predation of existing nests except for the occasional nest in other zones. Of course, first-night predation cannot be prevented except by removing the raccoons.

Sally Murphy gave the benefit of her experience with raccoon predators. It is almost always the work of a few large males who are very territorial, not allowing other animals into the areas. It is useless, therefore, to remove raccoons randomly from other areas of the community: they must be trapped in the beach areas. This may give a year or two of relief, but eventually other raccoons will move in.

The Town of Kiawah Island is considering a program to reduce the raccoon population.

Nest Data Spreadsheet

Beach/Island _KIAWAH ISLAND_____ Year _2003_____

Mail to:
Sally Murphy, SCDNR
P. O. Box 12559, Charleston, SC 29422
Email: sccturtle@mrd.dnr.state.sc.us

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
Initial Record				**Relocated Nests**													
					Negative Impact			***Emergence***		***Inventory Data***						***Negative Impact***	
Nest No.	**Location Data**	**Trial Nest**	**Date Laid** (A.M.)	**No. of Eggs Laid**	**Eggs Lost to Probing**	**Depredation**	**Storm Inundation or Erosion**	**Date of First Emergence** (A.M.)	**Incubation Duration** I minus D	**Date Inventoried**	**Unhatched Eggs**	**Dead Hatchlings**	**Live Hatchlings**	**Total Live Hatchlings** E - (F+L+M)	**% Hatch Success** O/E x 100	**Eggs Lost to Probing**	**Depredation**
		X				**X**	**X**										**X**
1	10		4-May	115				7/6/2003	63	7/19/2003	12	0	98	103	89.57		
2	30		9-May	134				7/16/2003	68	7/19/2003	4	1	0	129	96.27		
3	15		10-May	133				7/16/2003	67	7/23/2003	15	2	25	116	87.22		
4	31		11-May	150					N/A	7/29/2003	20	98	0	32	21.33		
5	20		11-May	114				7/19/2003	69	7/22/2003	9	1	5	104	91.23		
6	26		12-May						N/A					0	#DIV/0!		X
7	10		12-May	153					N/A	7/26/2003	29		1	124	81.05		
8	36		14-May	164				7/20/2003	67	7/25/2003	30	14	19	120	73.17		
9	26		15-May	127				7/21/2003	67	7/25/2003	4	1	2	122	96.06		
10	11		15-May	163		**X**			N/A	7/29/2003	53	0	1	110	67.48		
11	36		16-May						N/A					0	#DIV/0!		
12	29		16-May						N/A					0	#DIV/0!		
13	37		17-May						N/A					0	#DIV/0!		
14	29		17-May						N/A					0	#DIV/0!		
15	14		17-May						N/A					0	#DIV/0!		

16	16		18-May						N/A					0	#DIV/0!		
17	13		19-May						N/A					0	#DIV/0!		
18	29		19-May						N/A					0	#DIV/0!		
19	12		20-May	117				7/20/2003	61	7/23/2003	48	0	1	69	58.97		
20	31		21-May						N/A					0	#DIV/0!		
21	29		21-May						N/A					0	#DIV/0!		X
22	32		22-May						N/A					0	#DIV/0!		
23	31		22-May						N/A					0	#DIV/0!		
24	28		22-May						N/A					0	#DIV/0!	3	
25	27		22-May	103		X			N/A	8/8/2003	103			0	0.00		
26	27		22-May	130	2			7/25/2003	64	7/28/2003	15	1	9	112	86.15		
27	23		22-May	101				7/25/2003	64	8/3/2003	3	1	20	97	96.04		
28	24		22-May						N/A					0	#DIV/0!		
29	37		25-May						N/A					0	#DIV/0!		
30	31		25-May	104				8/6/2003	73	8/9/2003	0	5	0	99	95.19		
31	22		25-May						N/A					0	#DIV/0!		
32	21		25-May						N/A					0	#DIV/0!		
33	20		25-May						N/A					0	#DIV/0!		
34	20		25-May						N/A					0	#DIV/0!		
35	34		27-May						N/A					0	#DIV/0!		
36	27		27-May						N/A					0	#DIV/0!		
37	11		27-May	114				7/21/2003	55	7/25/2003	14	0	12	100	87.72		
38	36		28-May	146				7/27/2003	60	7/30/2003	8	1	0	137	93.84		
39	37		29-May	131				7/28/2003	60	7/31/2003	25	0	0	106	80.92		
40	34		29-May	97				7/27/2003	59	8/1/2003	9	14	8	74	76.29		
41	33		29-May	82	2			8/2/2003	65	8/5/2003	0	0	0	80	97.56		

42	11		29-May						N/A					0	#DIV/0!		
43	30		30-May	156				7/29/2003	60	8/1/2003	1	4	1	151	96.79		
44	10		30-May	132		X			N/A	8/13/2003	67	0	0	65	49.24		
45	15		30-May	127				7/29/2003	60	8/1/2003	6	1	20	120	94.49		
46	15		30-May	156				7/29/2003	60	8/1/2003	15	1	2	140	89.74		
47	31		31-May	124				7/31/2003	61	8/4/2003	10	10	0	104	83.87		
48	27		31-May						N/A					0	#DIV/0!		
49	15		31-May	136	3			8/2/2003	63	8/5/2003	37	1	3	95	69.85		
50	15		31-May	117				7/29/2003	59	8/1/2003	8	0	3	109	93.16		
51	29		1-Jun						N/A					0	#DIV/0!		
52	8		1-Jun						N/A					0	#DIV/0!		X
53	3		1-Jun						N/A					0	#DIV/0!		X
54	10		1-Jun	99		X			N/A		99			0	0.00		
55	10		1-Jun	118				8/2/2003	62	8/5/2003	48	0	0	70	59.32		
56	38		2-Jun						N/A					0	#DIV/0!		
57	35		2-Jun	134		X			N/A	8/21/2003	134			0	0.00		
58	10		2-Jun	136		X		7/30/2003	58	8/2/2003	13	0	0	123	90.44		
59	10		2-Jun	166		X		7/31/2003	59	8/3/2003	21	0	1	145	87.35		
60	40		3-Jun	134		X		8/2/2003	60	8/5/2003	7	48	5	79	58.96		
61	31		4-Jun						N/A					0	#DIV/0!		
62	30		4-Jun						N/A					0	#DIV/0!		
63	16		4-Jun						N/A					0	#DIV/0!		
64	15		4-Jun						N/A					0	#DIV/0!		
65	28		5-Jun						N/A					0	#DIV/0!		
66	32		5-Jun						N/A					0	#DIV/0!		
67	36		5-Jun	121		X			N/A	8/22/2003	121			0	0.00		
68	36		5-Jun	124				8/5/2003	61	8/8/2003	8	2	26	114	91.94		
69	34		6-Jun						N/A					0	#DIV/0!		
70	10		6-Jun	136		X			N/A		136			0	0.00		[totally destroyed 6/10]
71	35		7-Jun						N/A					0	#DIV/0!		X
72	28		8-Jun						N/A					0	#DIV/0!		
73	27		8-Jun						N/A					0	#DIV/0!		
74	25		8-Jun						N/A					0	#DIV/0!		

75	1		8-Jun						N/A					0	#DIV/0!	
76	23		9-Jun						N/A					0	#DIV/0!	X
77	12		9-Jun						N/A					0	#DIV/0!	X
78	2		9-Jun						N/A					0	#DIV/0!	X
79	10		9-Jun	132				8/6/2003	58	8/9/2003	37	0	1	95	71.97	
80	23		10-Jun	116				8/6/2003	57	8/9/2003	7	20	0	89	76.72	
81	19		10-Jun						N/A					0	#DIV/0!	
82	12		10-Jun	120		X		8/2/2003	53	8/5/2003	40	0	0	80	66.67	
83	29		11-Jun	134				8/7/2003	57	8/10/2003	1	34	67	99	73.88	
84	11		11-Jun	141		X		8/13/2003	63	8/16/2003	49	3	0	89	63.12	
85	36		12-Jun	130					N/A	8/29/2003	21	0	0	109	83.85	
86	28		12-Jun						N/A					0	#DIV/0!	
87	17		12-Jun						N/A					0	#DIV/0!	
88	17		12-Jun						N/A					0	#DIV/0!	
89	19		12-Jun						N/A					0	#DIV/0!	
90	11		13-Jun	122				8/9/2003	57	8/12/2003	65	1	5	56	45.90	
91	26		14-Jun	137				8/12/2003	59	8/15/2003	23	63	1	51	37.23	
92	29		15-Jun	128	2	X		8/9/2003	55	8/11/2003	4	26	14	96	75.00	
93	28		15-Jun	110					N/A					110	100.00	
94	28		15-Jun						N/A					0	#DIV/0!	
95	27		15-Jun						N/A					0	#DIV/0!	
96	16		15-Jun						N/A					0	#DIV/0!	
97	10		15-Jun	120		X		8/11/2003	57	8/14/2003	120	0	0	0	0.00	
98	34		16-Jun						N/A					0	#DIV/0!	
99	31		16-Jun						N/A					0	#DIV/0!	
100	11		16-Jun	133				8/10/2003	55	8/13/2003	21	0	0	112	84.21	
101	31		17-Jun						N/A					0	#DIV/0!	
102	27		17-Jun						N/A					0	#DIV/0!	
103	22		17-Jun						N/A					0	#DIV/0!	X
104	19		17-Jun						N/A					0	#DIV/0!	
105	18		17-Jun						N/A					0	#DIV/0!	
106	11		17-Jun						N/A					0	#DIV/0!	X
107	11		17-Jun	139				8/11/2003	55	8/14/2003	21	1	2	117	84.17	
108	38		18-Jun	128		X		8/14/2003	57	8/17/2003	12	0	3	116	90.63	
109	23		18-Jun						N/A					0	#DIV/0!	
110	14		18-Jun	106				8/15/2003	58	8/17/2003	6	0	0	100	94.34	
111	37		19-Jun						N/A					0	#DIV/0!	
112	34		19-Jun						N/A					0	#DIV/0!	
113	30		19-Jun						N/A					0	#DIV/0!	

114	25		19-Jun						N/A					0	#DIV/0!		
115	29		20-Jun						N/A					0	#DIV/0!		
116	22		20-Jun						N/A					0	#DIV/0!		X
117	21		20-Jun						N/A					0	#DIV/0!		X
118	17		20-Jun	129				8/17/2003	58	8/20/2003	2	0	9	127	98.45		
119	15		20-Jun	132				8/21/2003	62	8/24/2003	23	1	9	108	81.82		
120	15		20-Jun	73				8/21/2003	62	8/24/2003	11	0	1	62	84.93		
121	15		20-Jun	131				8/21/2003	62	8/24/2003	7	0	0	124	94.66		
122	39		21-Jun						N/A					0	#DIV/0!		
123	31		22-Jun						N/A					0	#DIV/0!		
124	24		22-Jun	124		X			N/A	8/21/2003	47	33	4	44	35.48		
125	15		22-Jun						N/A					0	#DIV/0!		
126	15		23-Jun						N/A					0	#DIV/0!		
127	29		23-Jun						N/A					0	#DIV/0!		
128	35		24-Jun						N/A					0	#DIV/0!		
129	38		24-Jun	144				8/19/2003	56	8/22/2003	5	5	0	134	93.06		
130	38		25-Jun	128				8/19/2003	55	8/24/2003	13	2	0	113	88.28		
131	22		25-Jun						N/A					0	#DIV/0!		
132	12		25-Jun	153				9/1/2003	68	9/4/2003	7	0	0	146	95.42		
133	14		25-Jun	117				8/22/2003	58	8/25/2003	62	0	0	55	47.01		
134	36		26-Jun	151				8/23/2003	58	8/27/2003	15	0	0	136	90.07		
135	28		26-Jun						N/A					0	#DIV/0!		
136	20		26-Jun						N/A					0	#DIV/0!		X
137	12		26-Jun	109	2			8/25/2003	60	8/28/2003	9	2	2	96	88.07		
138	37		27-Jun	134				8/26/2003	60	8/29/2003	2	0	1	132	98.51		
139	28		28-Jun						N/A					0	#DIV/0!		
140	27		28-Jun						N/A					0	#DIV/0!		
141	13		28-Jun	113	1			8/28/2003	61	8/31/2003	11	2	1	99	87.61		
142	11		28-Jun	122				8/21/2003	54	8/24/2003	6	20	3	96	78.69		
143	12		28-Jun	107				8/1/1953	N/A	8/26/2003	7	0	1	100	93.46		
144	12		28-Jun	99				8/22/2003	55	8/25/2003	25	0	0	74	74.75		
145	12		28-Jun	105				8/25/2003	58	8/28/2003	5	2	2	98	93.33		
146	13		29-Jun	149					N/A	9/1/2003	130	0	0	19	12.75		
147	30		30-Jun	132				9/7/2003	69	9/11/2003	34	0	0	98	74.24		
148	26		30-Jun						N/A					0	#DIV/0!		
149	23		30-Jun	149		X		8/23/2003	54	8/26/2003	2	0	5	147	98.66		
150	17		30-Jun						N/A					0	#DIV/0!		
151	16		30-Jun						N/A					0	#DIV/0!		
152	13		30-Jun	143				8/23/2003	54	8/26/2003	6	0	0	137	95.80		

153	13		30-Jun	154				8/24/2003	55	8/27/2003	15	1	0	138	89.61	
154	13		30-Jun	134		X		8/23/2003	54	8/26/2003	23	0	1	111	82.84	
155	25		1-Jul						N/A					0	#DIV/0!	
156	13		1-Jul						N/A					0	#DIV/0!	
157	35		2-Jul						N/A					0	#DIV/0!	
158	31		2-Jul						N/A					0	#DIV/0!	
159	30		2-Jul						N/A					0	#DIV/0!	
160	29		2-Jul	121				8/27/2003	56	9/2/2003	11	0	0	110	90.91	
161	22		2-Jul						N/A					0	#DIV/0!	
162	14		2-Jul	157		X		8/25/2003	54	8/28/2003	147	0	1	10	6.37	
163	14		2-Jul	125					N/A	9/1/2003	28	0	0	97	77.60	
164	22		3-Jul						N/A					0	#DIV/0!	
165	19		3-Jul	-					N/A					0	#DIV/0!	
166	17		3-Jul						N/A					0	#DIV/0!	
167	10		3-Jul						N/A					0	#DIV/0!	3
168	35		3-Jul	130		X			N/A	9/16/2003	95	0	0	35	26.92	
169	35		3-Jul	144		X		8/28/2003	56	8/31/2003	12	16	1	116	80.56	
170	14		5-Jul						N/A					0	#DIV/0!	
171	34		5-Jul	116	2			9/6/2003	63	9/10/2003	0	1	0	113	97.41	
172	39		6-Jul	147				9/7/2003	63	9/10/2003	57	1	5	89	60.54	
173	16		6-Jul	102				8/29/2003	54	9/1/2003	7	0	1	95	93.14	
174	16		6-Jul	110		X		8/28/2003	53	8/31/2003	3	8	0	99	90.00	
175	36		6-Jul	113				9/3/2003	59	9/7/2003	4	1	1	108	95.58	
176	22		7-Jul						N/A					0	#DIV/0!	
177	15		7-Jul						N/A					0	#DIV/0!	
178	11		7-Jul	117				9/4/2003	59	9/7/2003	7	1	1	109	93.16	
179	16		7-Jul	86				8/31/2003	55	9/3/2003	4	0	0	82	95.35	
180	24		8-Jul						N/A					0	#DIV/0!	
181	23		8-Jul						N/A					0	#DIV/0!	
182	22		8-Jul	10				9/9/2003	63	9/12/2003	4	0	0	6	60.00	
183	19		8-Jul						N/A					0	#DIV/0!	
184	32		10-Jul						N/A					0	#DIV/0!	
185	15		10-Jul	93				9/1/2003	53	9/4/2003	15	0	1	78	83.87	
186	27		11-Jul	109				9/5/2003	56	9/5/2003	3	71	7	35	32.11	
187	22		11-Jul						N/A					0	#DIV/0!	
188	16		11-Jul	154				8/31/2003	51	9/3/2003	7	6	14	141	91.56	
189	26		12-Jul						N/A					0	#DIV/0!	
190	11		12-Jul	143					N/A	9/3/2003	2	3	5	138	96.50	
191	33		13-Jul	128				9/20/2003	69	9/20/2003	2	14	0	112	87.50	

192	28		13-Jul						N/A					0	#DIV/0!		
193	28		13-Jul						N/A					0	#DIV/0!		
194	25		13-Jul						N/A					0	#DIV/0!		
195	18		13-Jul						N/A					0	#DIV/0!		
196	10		13-Jul	90		X		9/7/2003	56	9/10/2003	72	0	0	18	20.00		
197	10		13-Jul	98				9/1/2003	50	9/4/2003	0	1	2	97	98.98		
198	11		13-Jul	143				9/11/2003	60	9/14/2003	58	0	0	85	59.44		
199	11		13-Jul	97				9/5/2003	54	9/8/2003	15	0	0	82	84.54		
200	12		14-Jul						N/A					0	#DIV/0!		
201	29		15-Jul						N/A					0	#DIV/0!		
202	37		16-Jul						N/A					0	#DIV/0!		
203	24		16-Jul						N/A					0	#DIV/0!		
204	21		16-Jul	129				9/7/2003	53	9/12/2003	4	0	12	125	96.90		
205	38		17-Jul						N/A					0	#DIV/0!		
206	29		17-Jul	99				9/11/2003	56	9/11/2003	6	19	67	74	74.75		
207	11		17-Jul	136				9/11/2003	56	9/14/2003	43	1	0	92	67.65		
208	13		17-Jul	157				9/7/2003	52	9/12/2003	12	0	16	145	92.36		
209	12		19-Jul	97				9/14/2003	57	9/15/2003	41	1	0	55	56.70		
210	13		20-Jul	117				9/12/2003	54	9/15/2003	5	3	0	109	93.16		
211	34		22-Jul						N/A					0	#DIV/0!		
212	18		23-Jul						N/A					0	#DIV/0!		
213	23		24-Jul	117				9/16/2003	54	9/21/2003	12	9	0	96	82.05		
214	22		27-Jul						N/A					0	#DIV/0!		
215	31		28-Jul	106					N/A	9/27/2003	47	2	0	57	53.77		
216	24		28-Jul						N/A					0	#DIV/0!		
217	38		29-Jul	94				9/27/2003	60	9/30/2003	5	5	0	84	89.36		
218	18		29-Jul	87				9/25/2003	58	9/27/2003	0	0	0	87	100.00		
219	14		29-Jul	107				9/24/2003	57	9/27/2003	4	0	1	103	96.26		
220	2		29-Jul						N/A					0	#DIV/0!		
221	35		30-Jul						N/A					0	#DIV/0!		
222	38		1-Aug						N/A					0	#DIV/0!		
223	14		4-Aug	118	1			9/23/2003	50	9/26/2003	26	0	79	91	77.12		
224	12		4-Aug						N/A					0	#DIV/0!		
225	24		11-Aug						N/A					0	#DIV/0!		
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225		0		13219	15	23	0				2784	585	608	9835		6	13