

RAPTORS AND WATERBIRDS ON THE GREAT EGG HARBOR RIVER

ATLANTIC COUNTY, NJ

WINTER, 2010 - 2011

*The Eighth Field Season of a Systematic Study
of an Important Avian Wintering Area*

including Key Comparisons to the MULLICA RIVER

and an update on continuing investigation of

*FALL and SPRING MIGRATION and the BREEDING BIRDS
of the Great Egg Harbor River Watershed*

Submitted to: The Great Egg Harbor Watershed Association



**by Clay Sutton and James Dowdell
May 2011**

Submitted to:
**The Great Egg Harbor Watershed
Association
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Above:

An adult Peregrine Falcon in flight.

– Photo by Clay Sutton

On the cover:

A Peregrine Falcon (adult) eyeing a local inlet (Townsend's Inlet) in December 2010. The winter of 2010-2011 was a good winter for Peregrine Falcons both on the Great Egg Harbor River and throughout coastal New Jersey.

– Photo by Clay Sutton, December 2010

RAPTORS AND WATERBIRDS ON THE GREAT EGG HARBOR RIVER

The Eighth Field Season of a Systematic and Long-term Study Fall 2010 through Spring 2011

INTRODUCTION AND OVERVIEW

Beginning in Fall 2010, then through the core winter study period, and finally through spring of 2011, raptor and waterbird counts were conducted on the Great Egg Harbor River in Atlantic County, New Jersey. This marked the eighth consecutive field season for these studies carried out for the Great Egg Harbor Watershed Association.

Survey locations and methodology remained the same as in the first six seasons of study (see: *Wintering Raptors and Waterbirds of the Great Egg Harbor River, Atlantic County, NJ – A Summary of the First Five Years of Study, 2003-2008*, as well as subsequent reports). Eight core program winter surveys were conducted between the first week of December 2010 and the third week of March 2011. The results of these counts are shown in **Table 1. Peak winter season counts** are shown in **Bold Face**. Also shown are seasonal averages for key winter species. As in the first seven seasons of study, rare, threatened, and endangered species mapping (field sighting locations) for all survey dates are included at the end of this report.

While the core winter segment of this survey was carried out with the exact same methodology as the prior seven seasons of survey efforts, in 2010-2011 the survey scope was again expanded to include the full migration cycle, including fall and spring surveys. Survey efforts are now conducted in order to assess and document spring and fall migration, breeding species, and the all-important winter concentrations of raptors and waterbirds. Accordingly, Table 1 also shows the findings of systematic counts conducted from fall 2010 through spring 2011.

Core winter studies were carried out for the eighth consecutive winter season, and were complemented by surveys carried out during the “shoulder seasons” of fall and spring. Waterfowl and raptors use the Great Egg Harbor River at all seasons; numbers build in fall and the extent of the fall migration in part determines wintering numbers.

Many birds, particularly waterfowl (ducks and Brant) linger and remain well into the spring season, and other birds, including shorebirds, stage or concentrate in large numbers as they journey north. Finally, good numbers and a wide variety of breeding birds nest in the Great Egg watershed, and these are partially censused during spring and early fall surveys. Migratory shorebird use was a particular focus of these expanded spring and fall efforts.

For all these reasons, it was determined that while core winter studies would remain a major focus, expanded survey efforts in fall and spring would be carried out in an effort to document the full extent of avian ecovalues of the Great Egg at all seasons of the year.

TABLE 1
Great Egg Harbor River
Raptor and Waterbird Survey
August 2010 through May 2011

	FALL 2010		CORE WINTER PERIOD 2010-2011									SPRING 2011	
DATE	8/26	9/13	12/3	12/20	1/4	1/19	2/11	2/24	3/9	3/22	AVG (N = 8)	4/26	5/11
LOONS to CORMORANTS													
Red-throated Loon			13	15	4	3	22	14	8	8		1	
Common Loon			3	11	8	25	6	10	17	17		15	3
Pied-billed Grebe				1					1	1			
Horned Grebe				1	4	2	37	2	2	7		2	
Northern Gannet										2		3	5
Brown Pelican	8	1											
Dbl-cr Cormorant	169	43	46	52	30	21	150	64	109	113		288	125
BITTERNs to VULTURES													
Least Bittern													5*
Great Blue Heron	8		13	15	8	7	8	12	4	10		3	2
Great Egret	39	25								15		63	49
Snowy Egret	36	55										46	79
Little Blue Heron	3	2										1	2
Tricolored Heron													1
Green Heron	1												
Black-cr Nt-Heron													1
Yellow-cr Nt-Heron	5												10
Glossy Ibis												2	330
Black Vulture	6		2		4	11	10	6	6		4.88	5	4
Turkey Vulture	73	26	54	49	76	74	96	85	96	66	74.50	77	102
WATERFOWL													
Snow Goose					1								
Canada Goose	71	1	314	478	136	302	519	655	430	181	377	77	58
Brant			485	344	1508	726	2550	1615	890	1269	1173	1060	244
Mute Swan	67	6	93	37	70	73	64	50	74	62		101	87
Tundra Swan			9	10	30	40	65	80	6				
Wood Duck													4
Gadwall	1	2	18		19	14	23	118	162	90		14	
Eurasian Wigeon			1			1		1	1				
American Wigeon			26	3	21	30	49	217	218	34			
Am Black Duck	73	75	244	253	474	378	1006	1369	1229	302	657	75	41
Mallard	117	90	58	35	263	178	294	683	407	44	245	50	29
Blue-winged Teal	3	2								2		8	
Northern Shoveler			2		1	1				4		2	
Northern Pintail		2	177	4	111	55	352	1215	1294	60	409	6	
Green-winged Teal	30	100	115		14	2	40	1264	878	766	385	212	
Eurasian Green-winged Teal								2	1	1			
Canvasback								1*					
Ring-necked Duck								20		8			

Peak winter counts for key species shown in **Bold Face**

* reported by other reliable observers
on or near the survey date

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WATERFOWL (continued)													
Greater Scaup							6						
Lesser Scaup							320	220					1
Scaup (sp.)				960	40		3706	3200	300	340		2	
Common Eider				10	18				20				
Surf Scoter				20	20			4					
White-winged Scoter			2	2	3								
Black Scoter				60	80			22					
Scoter (sp.)							26	30	80	19			
Long-tailed Duck				70	60	20	29	34	22	26			
Bufflehead			124	391	427	329	1670	954	269	401		21	
Com. Goldeneye				4	12	2	32	8	15				
Hooded Merganser			24	5	38	91	17	166	22	6			
Com. Merganser			1		21	19	26	99	2				
Red-br Merganser			1	17	39	23	79	85	59	71		36	
Ruddy Duck										1			
DIURNAL RAPTORS													
Osprey	71	11		1						13		59	64
Bald Eagle	3	1	5	12	9	5	15	12	6	10	9.25	8	11
Northern Harrier	5	2	25	14	27	25	26	28	21	11	22.13	3	5
Sharp-shinned Hawk			1	2	1		2	2	2		1.25		
Cooper's Hawk				3	1	1		1	2	3	1.38		4
Red-sh Hawk				1	1		1				0.38		
Broad-winged Hawk												1	2
Red-tailed Hawk	7		27	24	29	31	71	28	31	42	35.38	29	32
Rough-legged Hawk				1*	2	3	1	1		1	1.13		
Golden Eagle					1*						0.13		
American Kestrel								1		4	0.63	1	
Merlin		1		1		1			1		0.38		
Peregrine Falcon			3	5	1	2	1	2	1	1	2.00	1	2
GROUSE to CRANES													
Wild Turkey								6				6	2
Clapper Rail	7	1										21	20
American Coot			2										
SHOREBIRDS													
Black-bellied Plover	24	3	19	10	6	14						9	4
Am. Golden-Plover		1*											
Semipalmated Plover	63	16											55
Piping Plover													1
Killdeer							2		2	1		1	1

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SHOREBIRDS (continued)													
Am Oystercatcher	41	69	78	96	102	64	1	78	56	32		27	6
American Avocet	3												
Greater Yellowlegs	38	15	28	6	1			3	8	19		61	18
Lesser Yellowlegs	37	2								2		8	1
Willet	2	7		1								79	57
Whimbrel												1	74
Ruddy Turnstone	15		1	1									
Sanderling	80	700	18	70	14	3							
Semipalmated Sdp	660	280											16
Western Sandpiper		1											
Least Sandpiper	133	45										25	247
White-rumped Sdp	11	2											
Baird's Sandpiper		1											
Pectoral Sandpiper	3	4											
Purple Sandpiper					1								
Dunlin			483	177	82	80	200	88	80	142		15	1
Buff-br Sandpiper		6*											
Sh-billed Dowitcher	17											6	15
Long-billed Dowitcher	1												
Wilson's Snipe	1			1					2				
Wilson's Phalarope	1*												
TOTAL SHOREBIRDS	1129	1151										232	496
JAEGERS to ALCIDS													
Laughing Gull	√	√								4		√	√
Ring-billed Gull	√	√	√	√	√	√	√	√	√	√		√	√
Herring Gull	√	√	√	√	√	√	√	√	√	√		√	√
Gt Bl-backed Gull	√	√	√	√	√	√	√	√	√	√		√	√
Lesser Bl-Backed Gull				1*									
Gull-billed Tern	5												1
Caspian Tern	2												
Royal Tern	5	2											
Common Tern	76	30										3	60
Forster's Tern	92	25										219	161
Least Tern	21												7
Black Skimmer	1003+	2800										4	10
PIGEONS to WOODPECKERS													
Great Horned Owl					1								
Short-eared Owl					2*	1*							
Belted Kingfisher	2	1	4	1		3	1	1					

Peak winter counts for key species shown in **Bold Face**

* reported by other reliable observers
on or near the survey date

WINTER RAPTORS AND WATERBIRDS – CORE WINTER STUDIES

Because the ongoing and long-term winter studies were extensively summarized and discussed at the five-year milestone, (see: *Wintering Raptors and Waterbirds of the Great Egg Harbor River, Atlantic County, NJ – A Summary of the First Five Years of Study, 2003-2008*), and because all previous reports dating back to 2003 are archived on the Great Egg Harbor Watershed Association website (www.gehwa.org/newsletter), we will not present an in-depth review of goals and objectives or methodologies here. Methods for core winter studies remained the same in winter 2010-2011 as in the first seven seasons of study. Nine point counts were conducted by Sutton and Dowdell for a period of 45 minutes per site.

In 2010-2011, eight surveys were conducted between 3 December 2010 and 22 March 2011. The findings of winter 2010-2011 compared highly favorably with the previous seven seasons of study, again confirming and corroborating the known high ecovalues of the Great Egg Harbor River. Red-throated Loons and Common Loons were abundant in the lower estuary, and Great Blue Herons were common throughout the winter. American Oystercatcher and Sanderling wintered on the lower rivers, mudflats, and beaches in good numbers.

Waterfowl numbers, particularly for key Great Egg species such as Brant, American Black Duck, and Green-winged Teal were consistent with recent years, although with the warm fall and average winter temperatures, then followed by a warm spring, few lingered as late as normally expected – keeping seasonal averages down for many ducks. That said, American Black Duck, Mallard, and N. Pintail (all key species) numbers were exceptional. Scaup were again abundant in the lower bay (a peak count of over 4,000 was tallied on 11 February 2011) but below the highest counts of some previous winters.

Winter raptor populations were also again exceptional on the Great Egg Harbor River in 2010-2011. Species and numbers were either at or near recent averages for most species. While weather and viewing conditions impacted several survey dates, this was more than made up for on 11 February 2011 when excellent soaring conditions (sunny with a brisk breeze) led to an all-time high count of 71 Red-tailed Hawks and the seasonal high count of 15 Bald Eagles. The Red-tail count was a new record by far.

It was a non-flight year for the irruptive Rough-legged Hawk, yet at least four individuals were present. An excellent five Peregrines were counted on 20 December and Peregrines were consistent throughout the season – recorded on all survey dates..

Once again, adjunct comparative studies were carried out on the Mullica River in winter 2010-2011. Although scaled back due to budget considerations, for the seventh consecutive year counts were undertaken on the Mullica River in order to compare and contrast raptor and waterfowl numbers and thereby gain perspective on Great Egg Harbor River bird populations. Mullica methodology was the same as in previous seasons. The findings for the Mullica River are shown in **Table 2**. (All 2010-2011 Mullica counts were carried out pro bono in order to continue and maintain this important long-term data set).

TABLE 2
Mullica River
Raptor and Waterbird Survey
Winter 2010-2011

				WINTER
DATE	12/21/10	1/30/11	3/8/11	AVG.
				(N = 3)
LOONS to CORMORANTS				
Red-throated Loon	7		1	
Common Loon	10	6	1	
Pied-billed Grebe	1	1	1	
Horned Grebe	4	8		
Double-cr Cormorant			1	
HERONS to VULTURES				
Great Blue Heron	14	10	3	
Black Vulture	18			6.00
Turkey Vulture	85	23	67	58.33
WATERFOWL				
Snow Goose		100	400	
Canada Goose	952	209	415	525
Brant	100	240	270	203
Mute Swan	5	2		
Tundra Swan	4	4		
Gadwall	1		2	
Am Black Duck	557	450	343	450
Mallard	691	475	241	469
Northern Pintail			100	33
Green-winged Teal			200	67
Canvasback	18		2	
Ring-necked Duck	12	2	15	
Greater Scaup	2			
Lesser Scaup	2			
Scaup (sp.)	700	400	525	
Common Eider				
Surf Scoter	2			
Scoter (sp.)			20	
Long-tailed Duck	26	14	2	
Bufflehead	170	70	4	
Com. Goldeneye	13	3	2	
Hooded Merganser	247	31	30	
Com. Merganser	3	31	4	
Red-br Merganser	66	16	30	
Ruddy Duck	1			

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Mullica River
Raptor and Waterbird Survey
Winter 2010-2011

				WINTER
DATE	12/21/10	1/30/11	3/8/11	AVG.
				(N = 3)
DIURNAL RAPTORS				
Bald Eagle	12	11	7	10.00
Northern Harrier	25	23	19	22.33
Sharp-shinned Hawk	1	2		1.00
Cooper's Hawk			2	0.67
Red-sh Hawk	2	2		1.33
Red-tailed Hawk	30	16	21	22.33
Rough-leg. Hawk	1		4	1.67
Peregrine Falcon	4	1	1	2.00
SHOREBIRDS				
Am. Oystercatcher			8	
Sanderling	12			
Dunlin	179			
GULLS to ALCIDS				
Ring-billed Gull	√	√	√	
Herring Gull	√	√	√	
Gt Bl-backed Gull	√	√	√	
PIGEONS to WOODPECKERS				
Great Horned Owl		2		
Short-eared Owl		1	1	
Belted Kingfisher			1	

EXPANDED SPRING THROUGH FALL STUDIES

For the third fall season and for the second time in spring, expanded seasonal studies sought to document the value of the Great Egg Harbor River Watershed throughout the year. During the spring migration period, the breeding season (which mostly coincides with the spring migration season) and the all-important fall migration for which South Jersey is so aptly known, monthly counts were conducted for all raptor and waterbird species, and data was indeed kept for all birds encountered, including passerines (songbirds).

Accordingly, Table 1, in addition to showing core winter studies findings, also presents the results of expanded seasonal studies, from 26 August 2010 through 11 May 2011.

In-depth analysis can only be offered at the conclusion of several years of expanded seasonal studies; it will take several spring and fall seasons to fully discover the status, patterns, and extent of seasonal bird use. Ongoing seasonal studies are planned through 2011 and 2012 and possibly beyond, additional coverage that will yield perspective on previous spring and fall efforts as well as possible trends in bird use.

Even though a full seasonal analysis is planned in 2013, it is important to note that the first three years of spring, fall, and breeding season surveys have been extremely successful. As Table 1 attests, waterbirds use the Great Egg Harbor River and estuary at all seasons. Loons are present in good numbers in spring and fall. Wading birds – herons, egrets, and ibis – abound in the warmer months, and 2009, 2010, and 2011 findings have documented major rookeries in the Ocean City and Longport areas.

Fall 2010 data confirmed the success of the booming “beach-nester” colony at the Longport Sod Banks (Malibu Beach WMA), with over 1,000 pairs of Black Skimmers present; they produced an estimated 800 young in 2010 (see previous season report). The tern and skimmer colony on the lower Great Egg Estuary is a major avian ecovalue of the region. It is the largest and most successful colony in New Jersey. May 2011 studies showed that the colony was forming again and we hopefully anticipate another successful breeding season in 2011. Also in spring 2011, a Piping Plover (endangered) was found on the lower Great Egg Estuary at the north end of Ocean City (see mapping), a potential breeding location.

In summary, Great Egg Harbor River core winter survey results confirmed and corroborated previous study results, and continued to document the Great Egg as a highly important area for raptors, waterfowl, and other water birds. Expanded coverage in fall 2010 and spring 2011 amply proved the value of the area to migrating birds, waterbirds, waterfowl, raptors, and shorebirds alike. Both early fall and spring dates overlapped the breeding season, confirming a tern and skimmer nesting colony unique to the entire region. Shorebird use has been found in spring and particularly fall as well. Of great interest, an amazing flock of 74 Whimbrel were found at Longport on 11 May 2011, a good number for the region for this species of special concern.

This report is a presentation of data from the 2010-2011 season only, and makes no effort to assess status and trends. This will be done in a major comprehensive report planned for the conclusion of the tenth year of studies (in 2013).

Nonetheless, 2010-2011 survey results are another important piece of the ongoing effort that has established the Great Egg Harbor River and Bay to be of high value to waterbirds, waterfowl, raptors and shorebirds in both New Jersey and the entire Mid-Atlantic Region, and at all seasons of the year. We thank the Great Egg Harbor River Council for the opportunity to carry out these important studies.

– Clay Sutton

23 bird species listed as Rare, Threatened, Endangered, and of Special Concern were observed and counted during the 2010-2011 Great Egg Harbor field survey. Table 5 lists the highest daily counts and the number of days these species were observed and counted

2010-2011 Bird Survey Endangered, Threatened, Priority, and Special Concern Species Counts				
Listed Bird Species	Breeding Status	Non-breeding Status	High Count	No. Days
American Kestrel (<i>Falco sparverius</i>)	Special Concern +	Special Concern +	4	3
American Oystercatcher (<i>Haematopus palliatus</i>)	Special Concern	Special Concern	102	12
Bald Eagle (<i>Haliaeetus leucocephalus</i>)	Endangered	Threatened	15	12
Black-crowned Night-heron (<i>Nycticorax nycticorax</i>)	Threatened	Special Concern	1	1
Black Skimmer (<i>Rynchops niger</i>)	Endangered	Threatened	2,800	4
Broad-winged Hawk (<i>Buteo platypterus</i>)	Special Concern	Regional Priority	2	2
Cattle Egret (<i>Bubulcus ibis</i>)	Special Concern +	Special Concern	0	0
Coopers Hawk (<i>Accipiter cooperii</i>)	Threatened	Threatened	3	7
Glossy Ibis (<i>Plegadis falcinellus</i>)	Special Concern	Regional Priority	330	2
Great Blue Heron (<i>Ardea herodias</i>)	Special Concern	Stable	15	11
Least Bittern (<i>Ixobrychus exilis</i>)	Special Concern	Special Concern	5	1
Least Turn (<i>Sterna antillarum</i>)	Endangered	Endangered	21	2
Northern Harrier (<i>Circus cyaneus</i>)	Endangered	Special Concern	28	12
Osprey (<i>Pandion haliaetus</i>)	Threatened	N/A	71	6
Peregrine Falcon (<i>Falco peregrinus</i>)	Endangered	Endangered	5	10
Pied-billed Grebe (<i>Podilymbus podiceps</i>)	Endangered	Special Concern	0	0
Piping Plover	Endangered	N/A	1	1
Red Knot (<i>Calidris canutus</i>)	Endangered	Special Concern	0	0
Red-shouldered Hawk (<i>Buteo lineatus</i>)	Endangered	Special Concern	1	3
Sanderling (<i>Calidris alba</i>)	N/A	Special Concern	700	6
Semipalmated Sandpiper (<i>Calidris pusilla</i>)	N/A	Special Concern	660	3
Sharp-shinned Hawk (<i>Accipiter striatus</i>)	Special Concern	Special Concern	2	6
Short-eared Owl	Endangered	N/A	2	2
Spotted Sandpiper (<i>Actitis macularia</i>)	Special Concern	Regional Priority	0	0
Tricolored Heron (<i>Egretta tricolor</i>)	Special Concern	Special Concern	1	1
Whimbrel (<i>Numenius phaeopus</i>)	N/A	Special Concern	74	2
Yellow-crowned Night Heron (<i>Nyctanassa violaceus</i>)	N/A	Threatened	10	2
Note: + = Recommended Threatened status listing by the Endangered and Nongame Species Advisory Committee				

Rare, Threatened, and Endangered Species

Field Mapping

2010 - 2011

MAP 1

MAP OF THE STUDY AREA

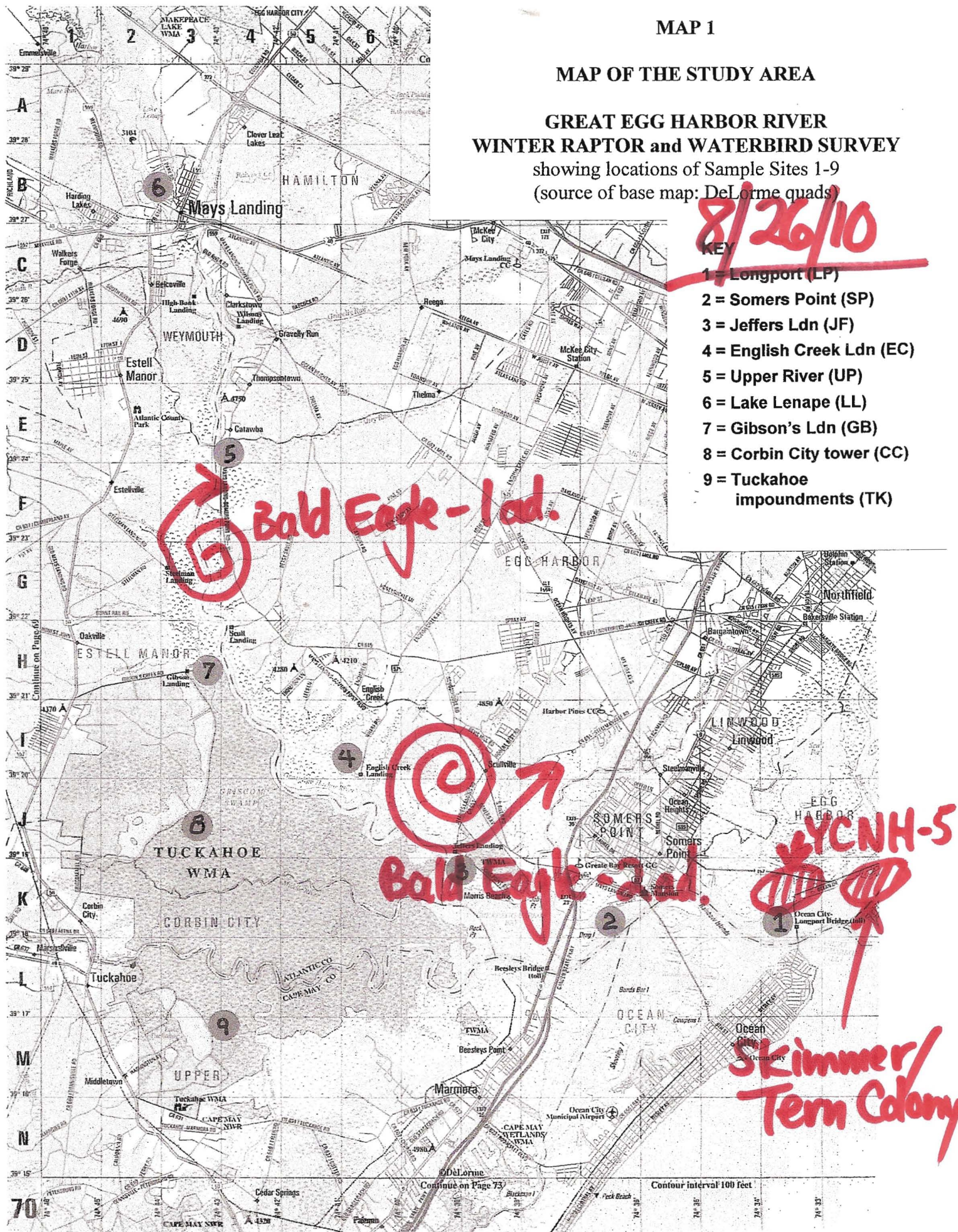
GREAT EGG HARBOR RIVER WINTER RAPTOR and WATERBIRD SURVEY

showing locations of Sample Sites 1-9
(source of base map: DeLorme quads)

8/26/10

KEY

- 1 = Longport (LP)
- 2 = Somers Point (SP)
- 3 = Jeffers Ldn (JF)
- 4 = English Creek Ldn (EC)
- 5 = Upper River (UP)
- 6 = Lake Lenape (LL)
- 7 = Gibson's Ldn (GB)
- 8 = Corbin City tower (CC)
- 9 = Tuckahoe impoundments (TK)



MAP 1

MAP OF THE STUDY AREA

GREAT EGG HARBOR RIVER WINTER RAPTOR and WATERBIRD SURVEY

showing locations of Sample Sites 1-9
(source of base map: DeLorme quads)

12/3/10

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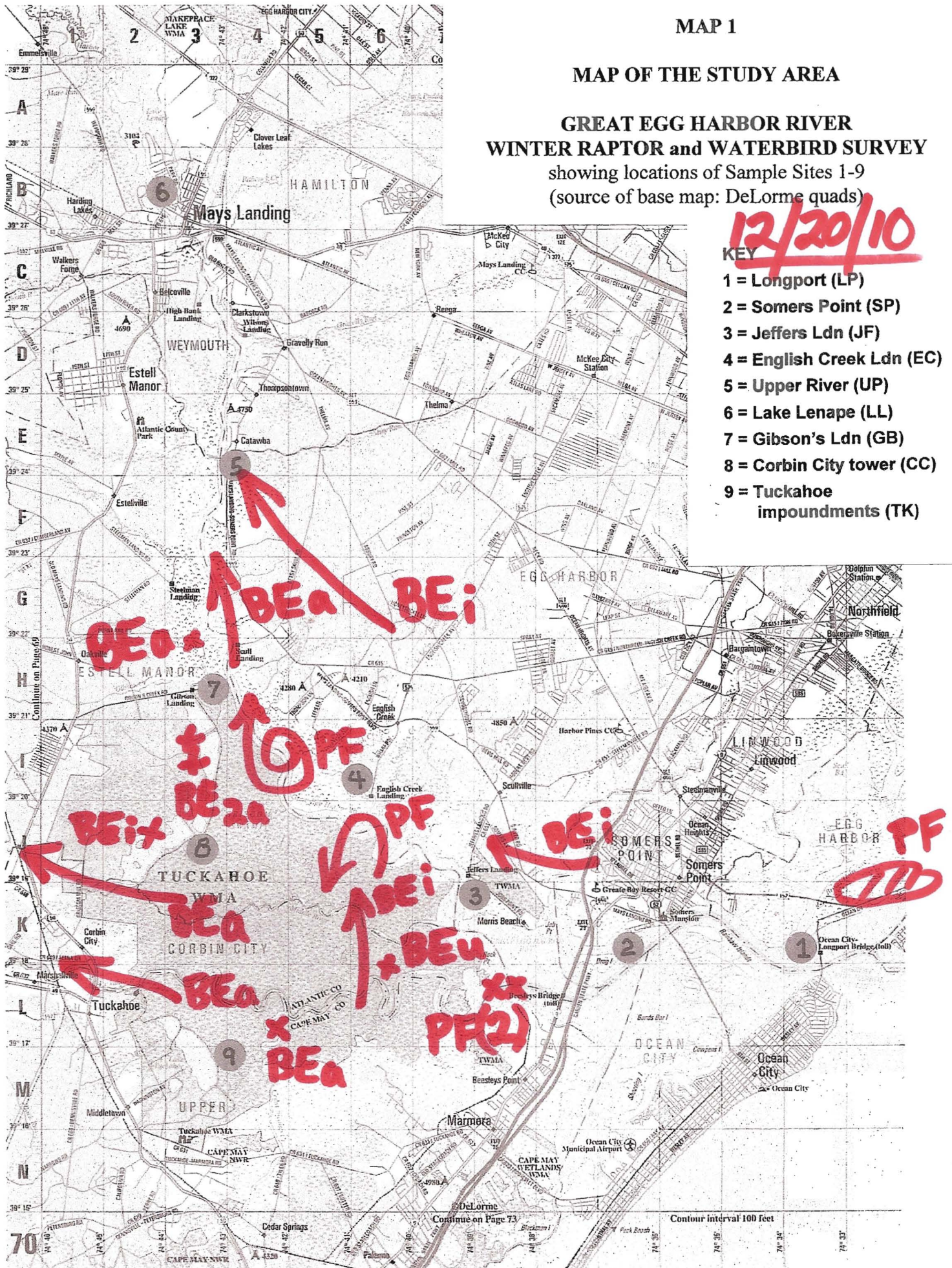
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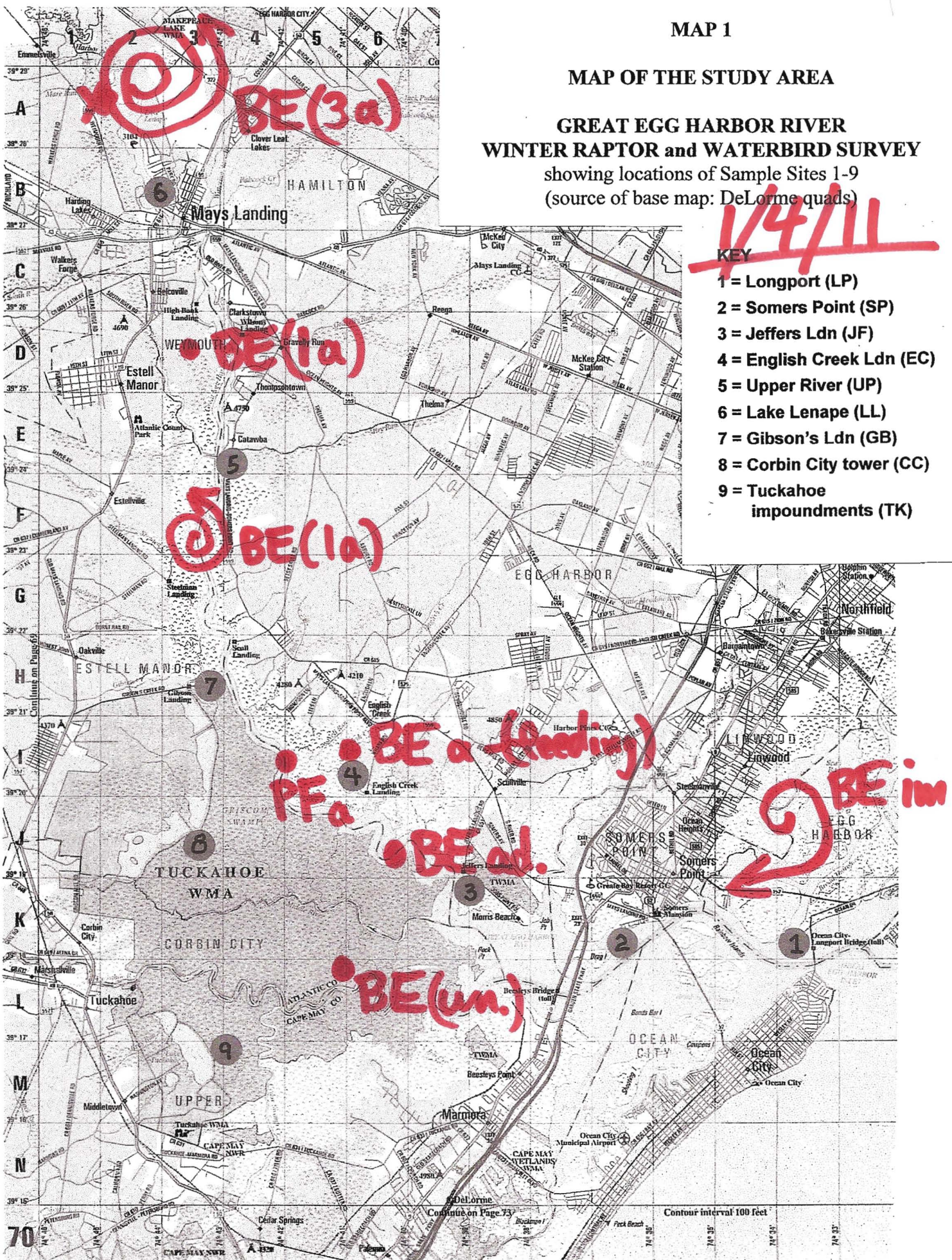
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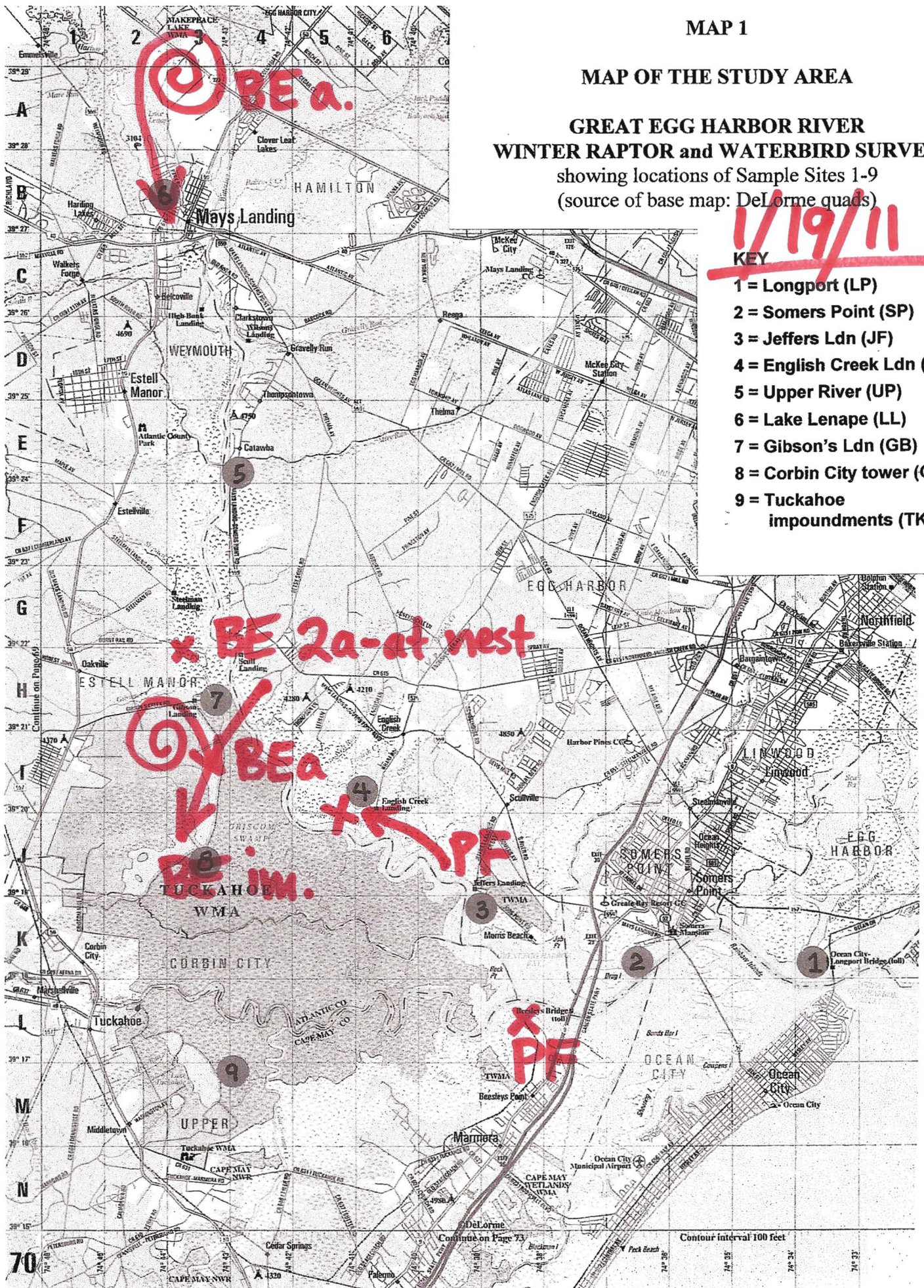
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- 8 = Corbin City tower (CC)
- 9 = Tuckahoe impoundments (TK)



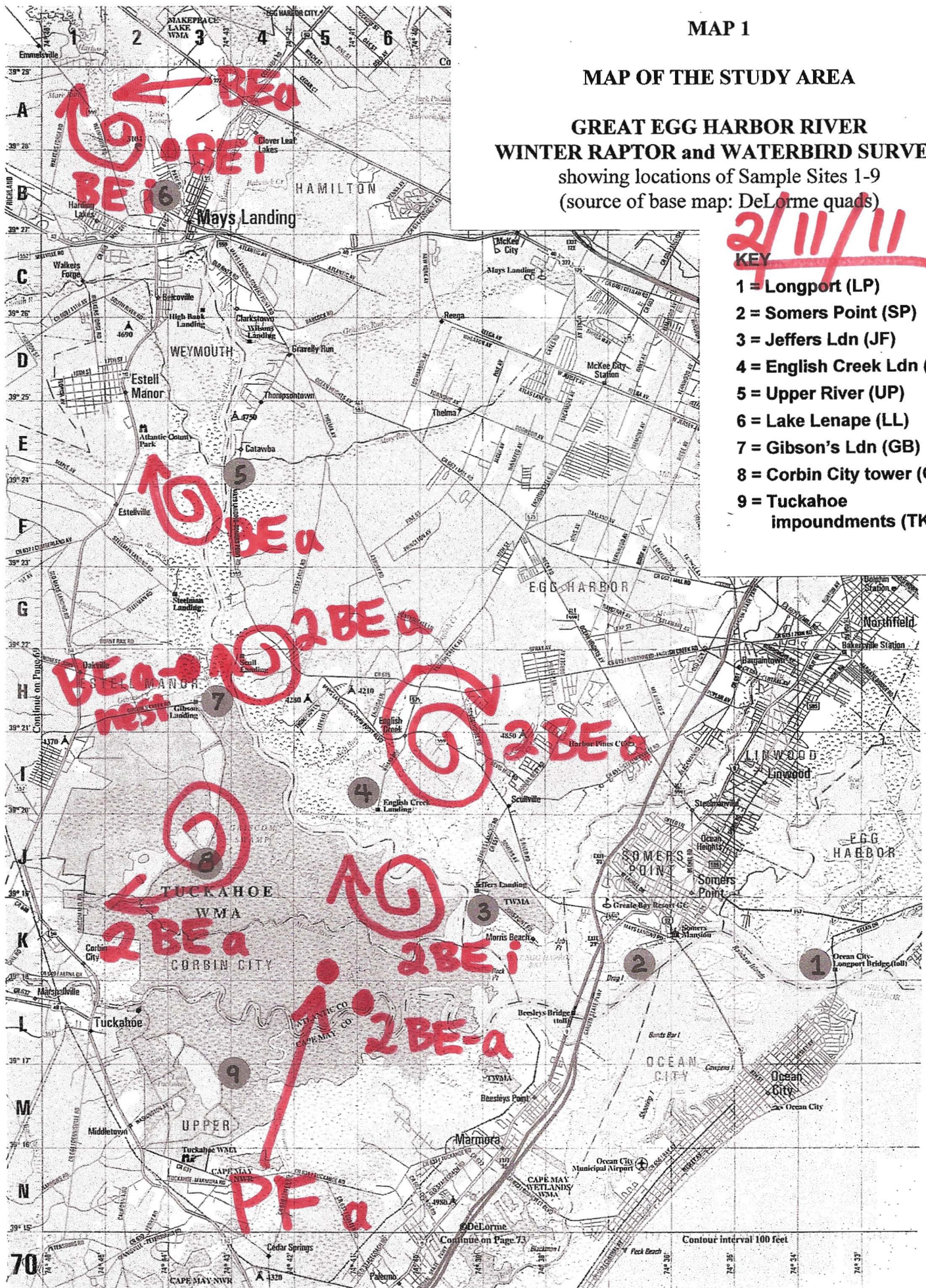
MAP 1

MAP OF THE STUDY AREA

**GREAT EGG HARBOR RIVER
WINTER RAPTOR and WATERBIRD SURVEY**
showing locations of Sample Sites 1-9
(source of base map: DeLorme quads)

~~2/11/11~~
KEY

- 1 = Longport (LP)
- 2 = Somers Point (SP)
- 3 = Jeffers Ldn (JF)
- 4 = English Creek Ldn (EC)
- 5 = Upper River (UP)
- 6 = Lake Lenape (LL)
- 7 = Gibson's Ldn (GB)
- 8 = Corbin City tower (CC)
- 9 = Tuckahoe impoundments (TK)



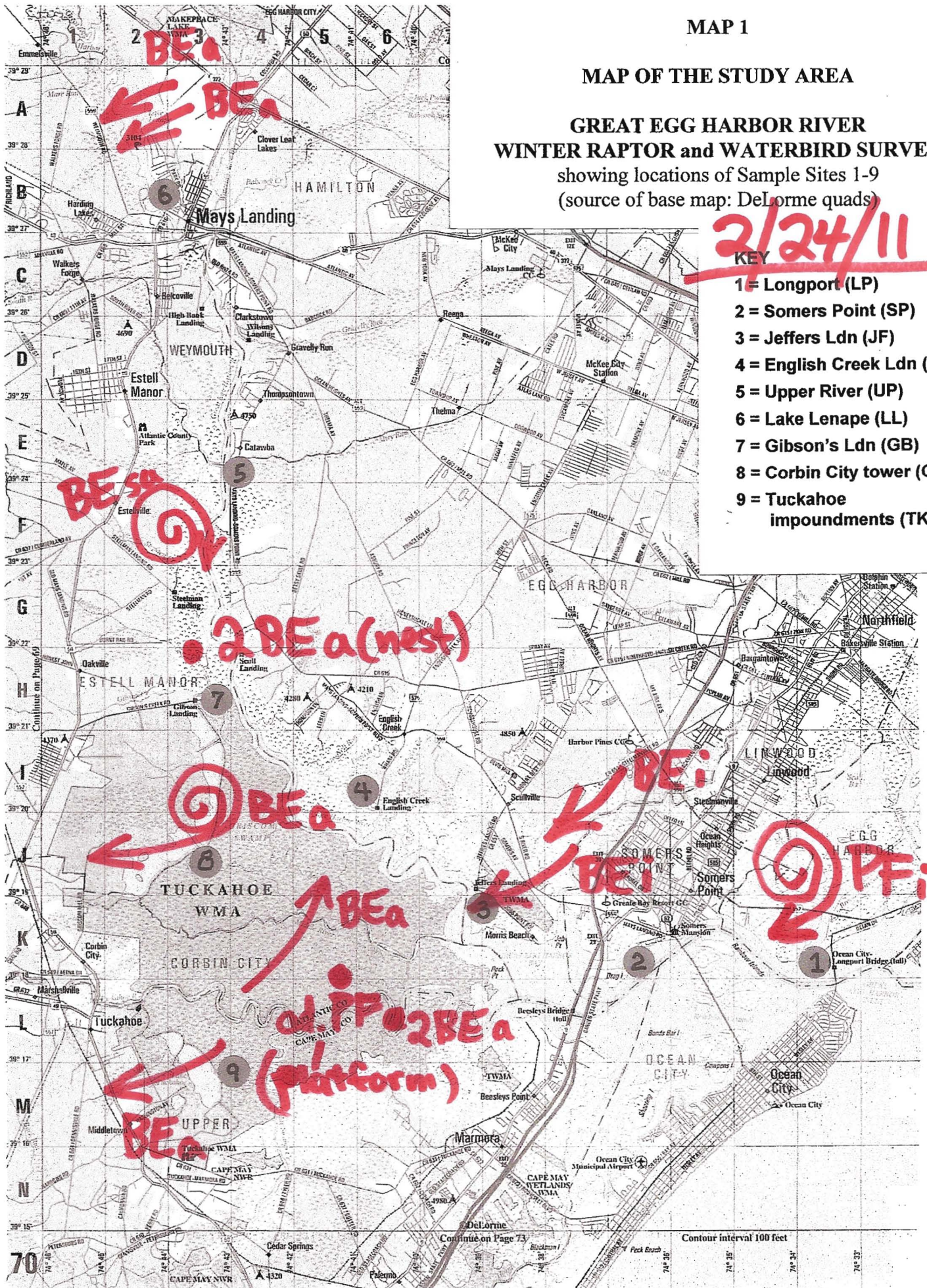
MAP OF THE STUDY AREA

**GREAT EGG HARBOR RIVER
WINTER RAPTOR and WATERBIRD SURVEY**
showing locations of Sample Sites 1-9
(source of base map: DeLorme quads)

2/24/11

KEY

- 1 = Longport (LP)
- 2 = Somers Point (SP)
- 3 = Jeffers Ldn (JF)
- 4 = English Creek Ldn (EC)
- 5 = Upper River (UP)
- 6 = Lake Lenape (LL)
- 7 = Gibson's Ldn (GB)
- 8 = Corbin City tower (CC)
- 9 = Tuckahoe impoundments (TK)



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Contour interval 100 feet

MAP OF THE STUDY AREA

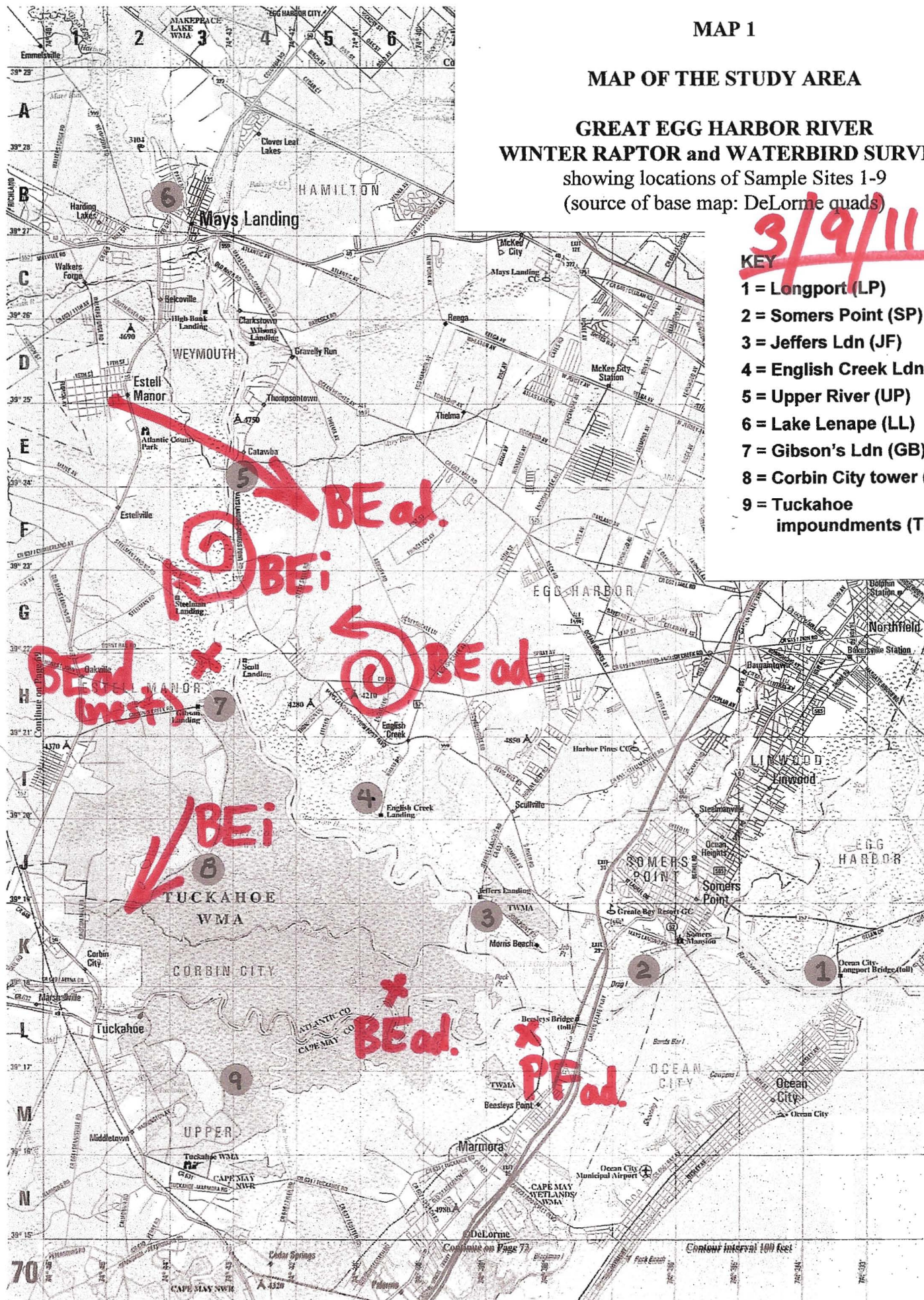
GREAT EGG HARBOR RIVER
WINTER RAPTOR and WATERBIRD SURVEY

showing locations of Sample Sites 1-9
(source of base map: DeLorme quads)

3/9/11

KEY

- 1 = Longport (LP)
- 2 = Somers Point (SP)
- 3 = Jeffers Ldn (JF)
- 4 = English Creek Ldn (EC)
- 5 = Upper River (UP)
- 6 = Lake Lenape (LL)
- 7 = Gibson's Ldn (GB)
- 8 = Corbin City tower (CC)
- 9 = Tuckahoe impoundments (TK)



MAP 1

MAP OF THE STUDY AREA

GREAT EGG HARBOR RIVER WINTER RAPTOR and WATERBIRD SURVEY

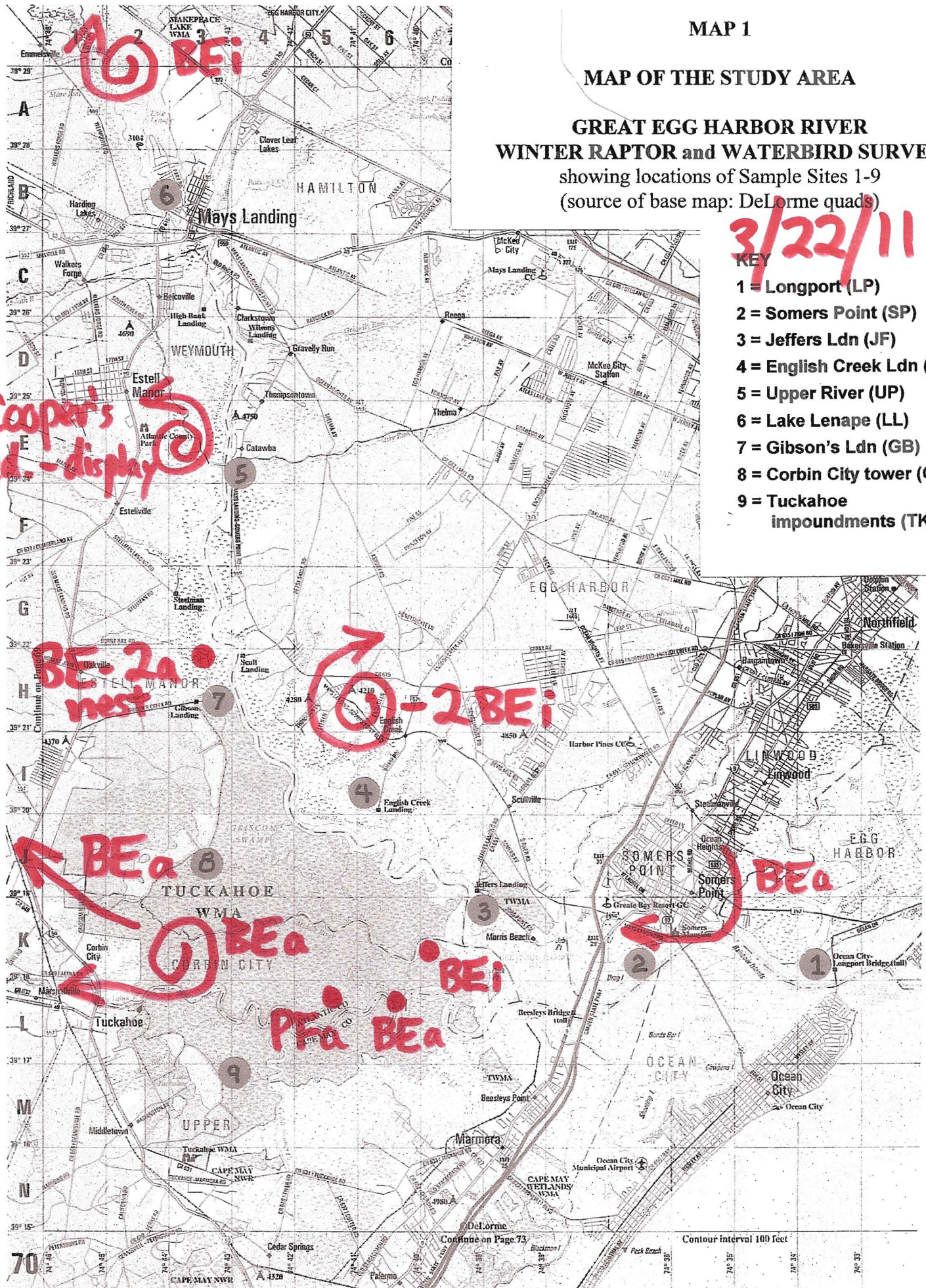
showing locations of Sample Sites 1-9
(source of base map: DeLorme quads)

3/22/11

KEY

- 1 = Longport (LP)
- 2 = Somers Point (SP)
- 3 = Jeffers Ldn (JF)
- 4 = English Creek Ldn (EC)
- 5 = Upper River (UP)
- 6 = Lake Lenape (LL)
- 7 = Gibson's Ldn (GB)
- 8 = Corbin City tower (CC)
- 9 = Tuckahoe impoundments (TK)

Cooper's
ad. - display



Continue on Page 73

Contour interval 100 feet

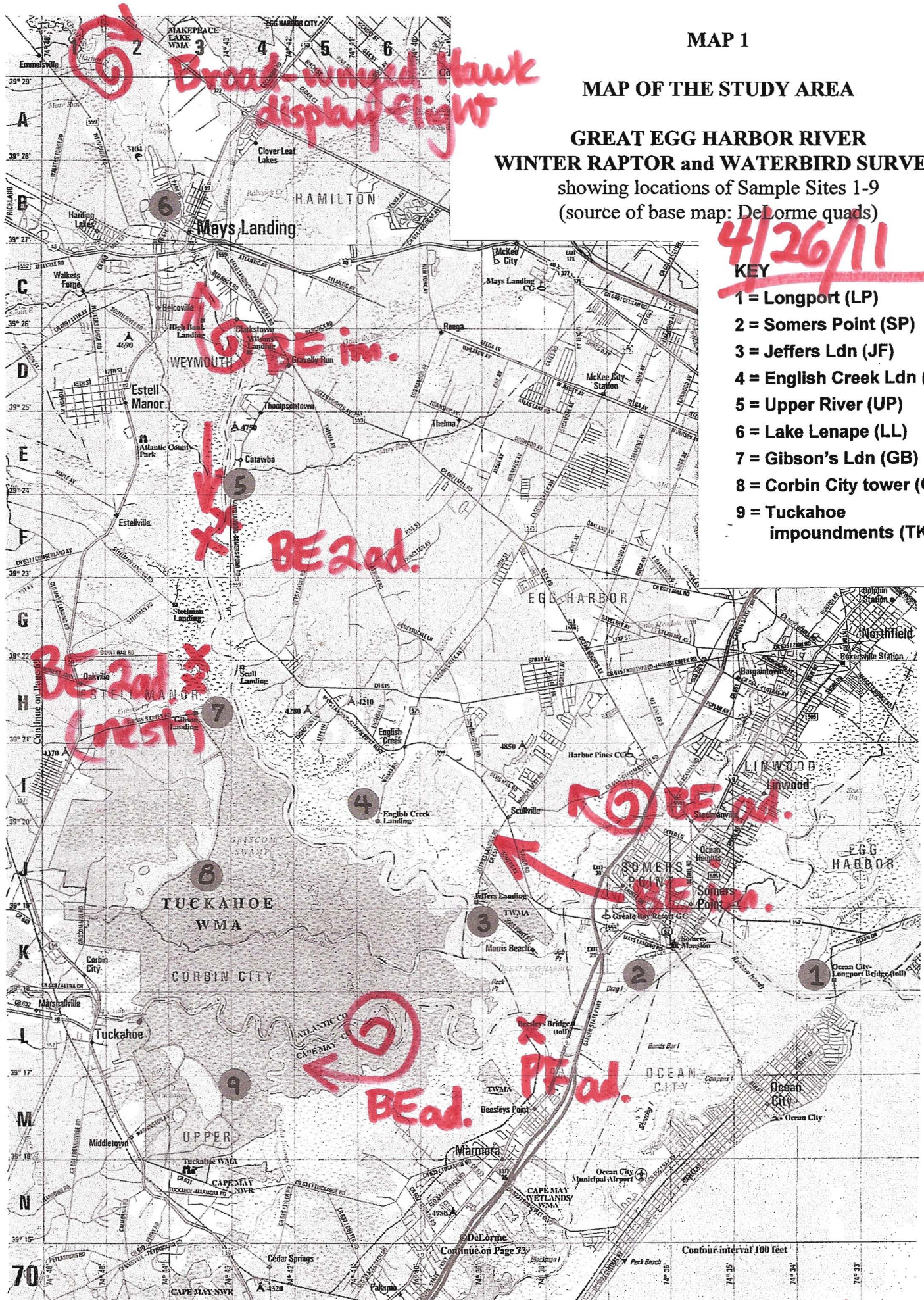
MAP 1

MAP OF THE STUDY AREA

**GREAT EGG HARBOR RIVER
WINTER RAPTOR and WATERBIRD SURVEY**
showing locations of Sample Sites 1-9
(source of base map: DeLorme quads)

4/26/11
KEY

- 1 = Longport (LP)
- 2 = Somers Point (SP)
- 3 = Jeffers Ldn (JF)
- 4 = English Creek Ldn (EC)
- 5 = Upper River (UP)
- 6 = Lake Lenape (LL)
- 7 = Gibson's Ldn (GB)
- 8 = Corbin City tower (CC)
- 9 = Tuckahoe
impoundments (TK)



x = perched

MAP 1

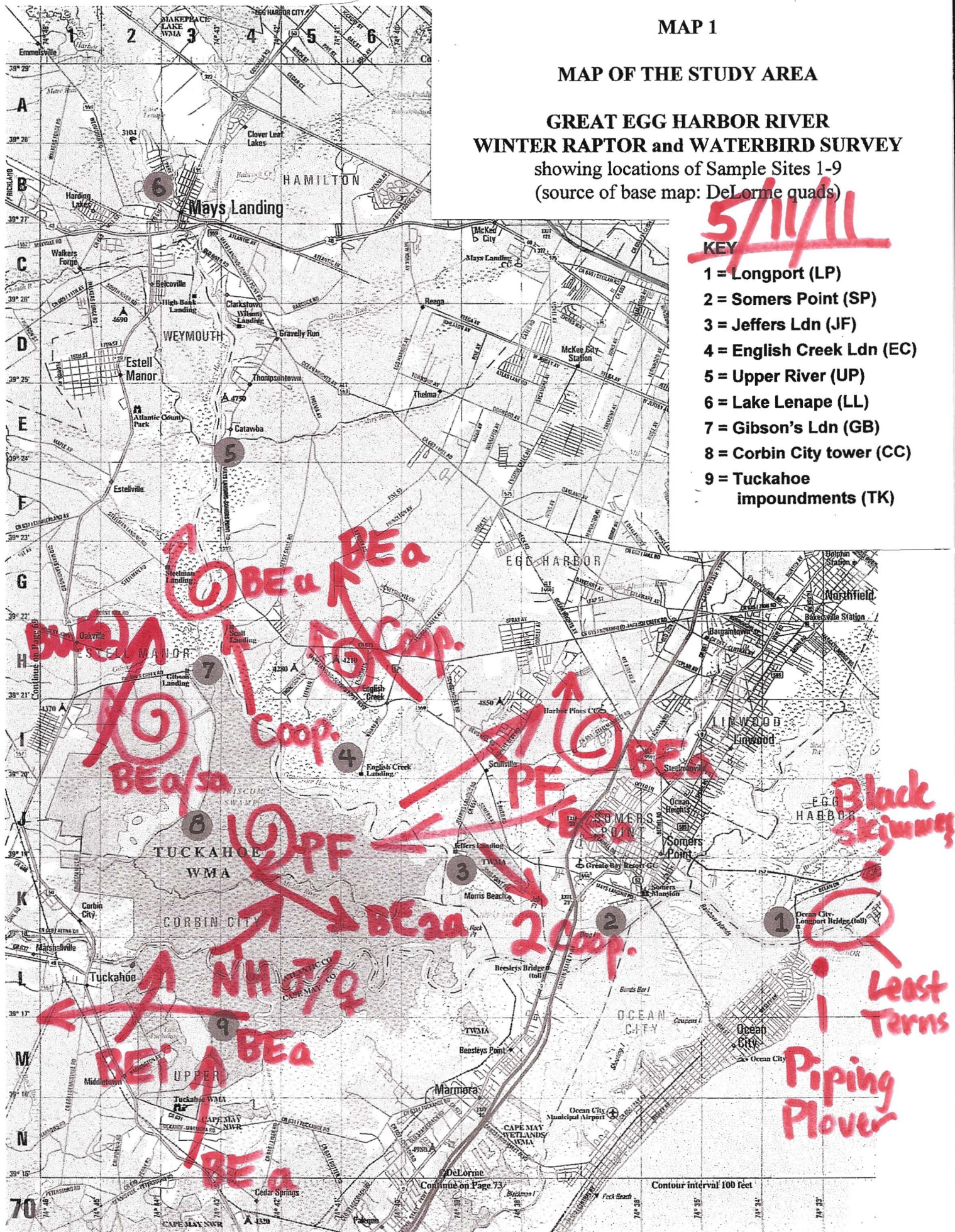
MAP OF THE STUDY AREA

GREAT EGG HARBOR RIVER WINTER RAPTOR and WATERBIRD SURVEY

showing locations of Sample Sites 1-9
(source of base map: DeLorme quads)

KEY

- 1 = Longport (LP)
- 2 = Somers Point (SP)
- 3 = Jeffers Ldn (JF)
- 4 = English Creek Ldn (EC)
- 5 = Upper River (UP)
- 6 = Lake Lenape (LL)
- 7 = Gibson's Ldn (GB)
- 8 = Corbin City tower (CC)
- 9 = Tuckahoe impoundments (TK)



BW = Broad-winged Hawk

**DISCLAIMER REQUIRED BY
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WATERSHED ASSOCIATION
WITH THE U.S. DEPARTMENT OF THE
INTERIOR, NATIONAL PARK SERVICE:**

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