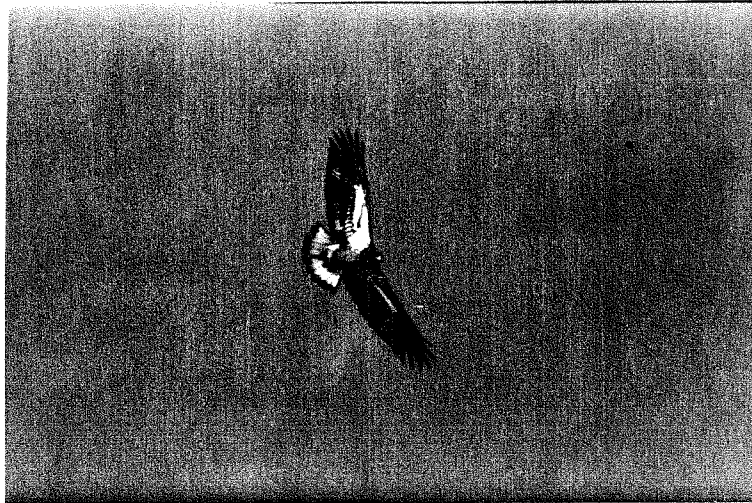


HA File No. 90.44A

Ongoing Raptor and Waterfowl Studies
on the Maurice River
Cumberland County, New Jersey



(Immature Bald Eagle Over the Maurice River,
near Heislerville, New Jersey)

Submitted March 28, 1992

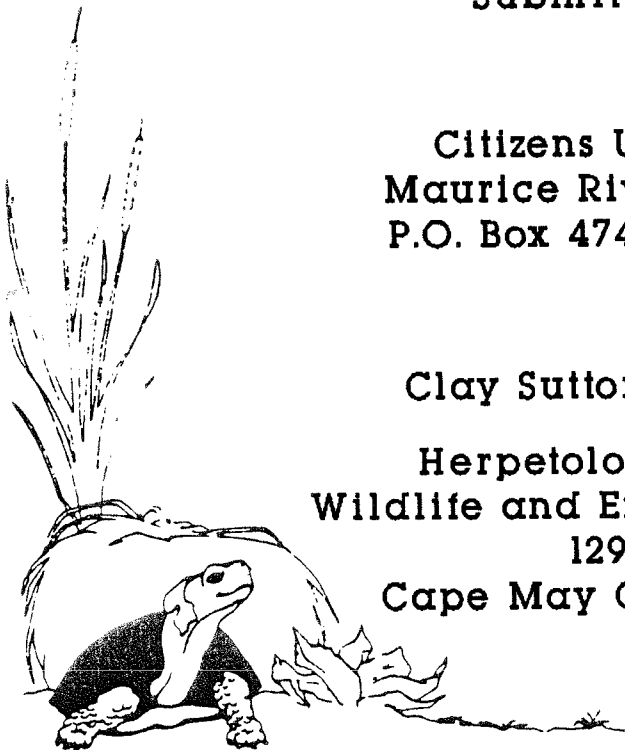
to

Citizens United to Protect the
Maurice River and Its Tributaries
P.O. Box 474, Millville, N.J. 08332

by

Clay Sutton and James Dowdell

Herpetological Associates, Inc.
Wildlife and Environmental Consultants
129 Buck Avenue
Cape May Court House, N.J. 08210



Bog Turtle, *Clemmys muhlenbergii*

Herpetological Associates, Inc. - Environmental Consultants

Please reply to ☒ 2525 Dover Road, Bamber Lake, Forked River, N.J. 08731 (609) 693-2030
☒ 129 Buck Avenue, Cape May Court House, N.J. 08210 (609) 465-3397
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March 28, 1992

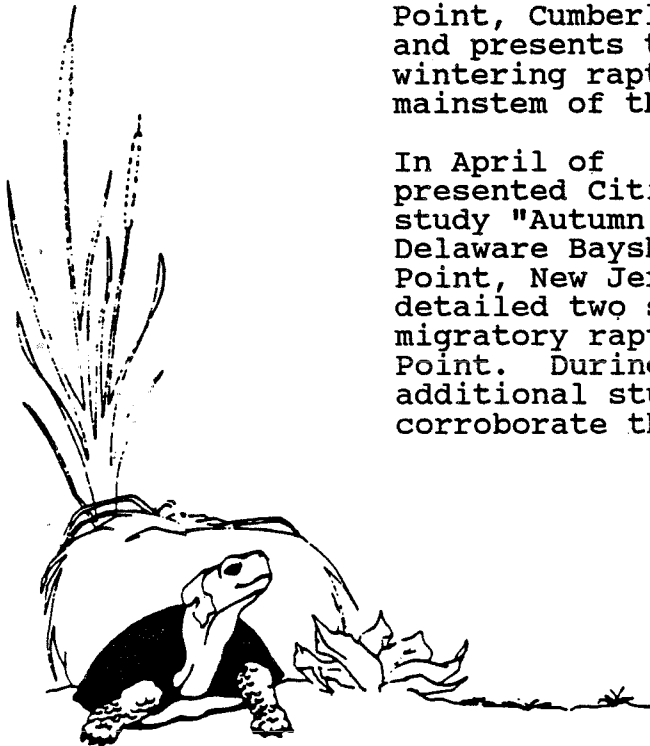
Mrs. Jane Morton Galetto, President
Citizens United to Protect the
Maurice River and Its Tributaries
P.O. Box 474
Millville, New Jersey 08332

Re: 1991-1992 Ongoing Raptor and Waterfowl Studies on
the Maurice River, Cumberland County, New Jersey.
HA File No. 90.44A.

Dear Jane,

We have now completed our fifth year on surveying the wintering raptor and waterfowl populations on the Maurice River. As per our agreement, this report will represent our final submission under our current contracts with Citizens United. This report details and summarizes the results of Herpetological Associates' Autumn Migratory Raptor Study at East Point, Cumberland County, on the lower Maurice River, and presents the findings of the recently completed wintering raptor and waterfowl survey efforts on the mainstem of the Maurice River.

In April of 1991, Herpetological Associates (HA) presented Citizens United (CU) with the results of our study "Autumn Raptor Migration Along New Jersey's Delaware Bayshore: A Hawk Migration Study at East Point, New Jersey" (HA File No. 91.31). This report detailed two seasons (fall, 1989 and fall, 1990) of migratory raptor studies and counts conducted at East Point. During the autumn of 1991, HA carried out additional studies at East Point designed to corroborate the previous season's findings.



Specializing in "endangered" and "threatened" plants and wildlife, their ecology and environment, and wetlands delineation.

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In 1991, count techniques and methodologies were the same as in 1989 and 1990. The hawk watch, designed to monitor raptor movements west up the Delaware Bayshore, was conducted from a point just north of the East Point Lighthouse. Coverage occurred for 53.5 hours over 17 days. The results of this effort are shown in Table 1. A total of 1,249 raptors of 16 species were sighted in 53.5 hours of observation over 17 days, for an average of 23.3 hawks per hour. All counts were conducted and recorded in accordance with the guidelines of the Hawk Migration Association of North America (HMANA).

The watch effort was conducted largely on a "time-available" basis and nowhere near the extensive efforts of the 1990 study was expended in 1991. As a result, many if not most of the peak raptor flights were missed in 1991. Nonetheless, a substantial raptor migration was again recorded moving up the Delaware Bayshore, and 1991's findings indeed confirm and corroborate the findings of the 1989 and 1990 studies at East Point. While not enough hours were put in 1991 to make a comparison with Cape May's famous raptor flights, it remains clear that a high percentage of raptors moving through New Jersey in the fall do not cross the bay at Cape May, but migrate west up the Delaware Bayshore, concentrating near the East Point before continuing on around the bay.

Because of the limited effort in 1991, few comparisons can be made to 1989 and 1990. However, black vultures continued their expansion into South Jersey as 14 migrants were estimated, compared to none in 1989 and only 15 for the full season in 1990. Osprey, at 40 birds, were judged to be comparatively more numerous in 1991. Eighteen bald eagles were recorded in 1991, for a higher birds per day and birds per hour average than was seen in 1990's full time effort. Eagles averaged over one per day in 1991, a figure augmented by the peak of 6 migrant bald eagles sighted on 26 November. Once again, as in 1989 and 1990, the broad-winged hawk flight was missed by the watch effort. Also again, rough-legged hawks were far more numerous at East Point, comparatively than at any coastal plain

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hawk watch anywhere in North America. Eight rough-legs were seen (6 light form and 2 dark form) in just 17 days, while the venerable Cape May count saw only 3 in 105 days and 1,000 hours plus of coverage. The study in 1991 again confirmed a major rough-legged flight west up the Delaware Bayshore. Finally, few peregrines were seen (only 4), but no time was put in during the crucial first week of October, when over 75% of migrant peregrines moved through the region.

The 1991 hawk migration study reaffirmed and corroborated the previous HA efforts at East Point and continued to monitor and record a massive raptor migration moving around the Delaware Bay in autumn. We again recommend that a full season watch be established there, and that a small observation tower be built near East Point (see 1990's report recommendations for details). The magnitude of the migration moving along the bay and concentrating near East Point, establishes an extreme value to the natural habitats along this corridor. This flight dictates that hawk migration, and the crucial role these Maurice River and Delaware Bay upland edge habitats play in the conservation of migratory raptors, become factors in land use decisions being made for the region.

A wintering raptor study was carried out on the Maurice River for the fifth consecutive season. For comparability from year to year, the exact same methods have been employed for all five winter studies. Fifty minute counts were conducted from eight sites along the river. (This methodology was fully explained in the publication of the first winter study, "Wintering Raptors and Waterfowl on the Maurice River", Records of New Jersey Birds, Vol. XIV, No. 3, Autumn, 1988). During the winter of 1991-1992, surveys were conducted on eight dates between 26 November and 21 March (The 21 March date represents only a partial survey, of less than half of the river). The results of the wintering raptor survey are included here as Table 2. This table records the results of individual surveys, and shows both peak numbers, and the average number of each species recorded.

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Black vultures were more numerous than in any previous year, with a remarkable maximum of 45 recorded on 11 January. A count of 160 turkey vultures was established near the Laurel Lake roost on 29 December. While not a "wintering" bird, the first returning osprey ("threatened") were recorded on 21 March, returning to the eight active nests along the Maurice River. Northern harrier ("endangered") populations remained high on the river throughout the winter with a minimum of 31 individuals present. Cooper's hawks ("endangered") were again present with at least six or seven individuals present. An adult male Cooper's hawk was picked up by the roadside in Bivalve on 9 February. Flightless and with an eye injury, the bird had either been hit by a car, or had flown into a wire. The bird was immediately transported to the Avian Rehabilitation Center in Marmora. Despite the fact that no bones were broken, the bird died five days later.

Two red-shouldered hawks ("endangered") were present, an adult near Heislerville recorded on the non-survey date of 13 January, and an immature north of the Burcham Farm on 13 March. Red-tailed hawks were comparatively more abundant than during any previous survey season, with an average of 41 birds on the river. Fifty-eight red-tails on 26 November contained many migrants, but 48 were present on 11 January along the 14 mile stretch of river which constitutes the study area. A immature leucistic individual was present all winter near the Mauricetown Bridge, and unlike the partial albino red-tailed seen sporadically during other winters, this bird was seen on all but the final survey. (The bird was still present at the writing of this report.) Red-tail courtship was seen as early as 25 January, copulation was observed 20 February, and a bird was on eggs in a nest near the Mauricetown Causeway on 21 March. The sole golden eagle observed on November 26 and was a migrant. No golden eagles were seen wintering on the river this season. The only peregrine ("endangered") observed was an adult female that was seen hunting over the river south of the Burcham Farm on 21 March. At

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least two short-eared owls ("endangered") spent the winter on the Maurice River, both near East Point, and were seen repeatedly throughout the study. One was photographed at close range on 9 February just north of the East Point lighthouse. As usual and as expected, great horned owls were numerous in the study area. While four were heard on 29 December, no survey efforts were directed at this common species.

As during the previous four winter studies, wintering bald eagles were a hallmark of the Maurice River during the 1991-1992 surveys. A total of 41 sightings were accrued during the seven regular surveys, for an average per river visit of 6 birds. The observed park was 10 bald eagles present on 11 January. More importantly, at least 20 individuals (7 adult and 13 immatures) were believed to have used the river during the study period (based on multiple concurrent sightings and careful plumage descriptions and determinations). Wintering bald eagle use of the river habitats remains one of the most important natural features of the Maurice River.

The Maurice River tributaries continue to be important roosting areas for the region's eagles. On 22 November, at 4:45 p.m., approximately three bald eagles headed east up the Manumuskin, to undoubtedly roost farther upriver. On 29 December, a four year old bald eagle flew down the Manumuskin, past the Barber dock, at 7:30 a.m.; proving roosting farther upriver (as observed and reported by HA associate, Bob Barber and Vince Elia). On 11 January, three adults flew east up the Manumuskin at about 3:30 p.m., not to be seen again. On 9 February, one immature disappeared up the Manumuskin during the late afternoon. Nightly roosting is clearly occurring along the Manumuskin tributary to the Maurice. While early season eagle-use seemed to be focused on the upper river, later in the season, the area just south of the Maurice River Bridge was a favored eagle concentration area. On 19 and 20 February, two different eagles were observed perched on the Cedar Island south of the bridge and adjacent to (across the river from) the Whibco property. A bald eagle was perched here on 28 February and 3 March as well. Earlier in the season, a bird used this perch site on 26 November.

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Eagle-use of the Maurice River and its tributaries remained at a high level despite waterfowl numbers being somewhat lower than previous winter seasons. Multiple eagle use continues to occur daily on the entire length of the Maurice, with birds being seen from Union Lake (where roosting also occurs) south to East Point. This 1991-1992 study confirms and corroborates the previous four seasons of study in proving that the Maurice River and its tributaries are crucial wintering habitat for the bald eagle in New Jersey. Eagle numbers were again high, and 1991-1992's numbers compare very favorably with the past two winter studies on the river, proving the Maurice is unequalled as eagle habitat in all of New Jersey.

In summary, eight winter surveys of the Maurice accrued 1,248 raptor sightings of 13 species, with an average of 171 raptors sighted per survey of the 14 mile-long study area (12.2 birds per linear mile of the river corridor). Assuming no turnover of birds, at least 334 raptors (peak numbers added together) wintered on the mainstem Maurice during 1991-1992. However, considerable migratory turnover does occur, with fall migration continuing through mid-December and spring migration beginning in early February. With this in mind, it is clear that far more than 334 raptors used the Maurice this past winter. A full comparison of the five years of raptor study data will be made in the near future by Clay Sutton and Paul Kerlinger of the Cape May Bird Observatory. It is our plan to compare and contrast the different river study segments as well. This report will be forthcoming in the spring of 1992 and will no doubt further the Maurice River as critical habitat for wintering vultures, eagles, hawks, and falcons.

Waterfowl were sampled concurrently with the winter raptor survey. As in the previous four winters, both raptors and waterfowl were sampled for 50 minute periods at each of the eight pre-established points along the river. And, as in the past, waterfowl populations were high both spatially and temporally throughout the study. The results of the waterfowl segment of the study are shown in Table 3.

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A total of 43,505 waterfowl sightings of 24 species were accrued during the seven full surveys. Even if no turnover of waterfowl populations occurred (which most assuredly does, but to an unknown degree), a bare minimum of 13,989 waterfowl used the mainstem Maurice and Maurice River Cove during winter 1991-1992, a figure arrived at by simply adding the peak number of each species together. Table 4 shows peak numbers recorded for each species on the Maurice River for winter 1991-1992.

In general, waterfowl populations were lower than expected no doubt due to the record mild winter of 1991-1992. While waterfowl population levels showed anticipated seasonal distribution, with populations lower (dispersed) in December due to waterfowl hunting season, then building in January, the expected peaks of late February/early March never occurred. Put simply, because of record high temperatures, many "northern" waterfowl never made it south to New Jersey. In addition, spring migration out of the region (to the north) was clearly occurring by mid to late January. Peak black duck, mallard, and pintail populations occurred, uncharacteristically on 11 January, with a sharp drop thereafter, followed by only a small spring resurgence in late February. As a result, anticipated high counts, comparable to those seen in previous survey seasons, never materialized. Nonetheless, waterfowl counts on the river were clearly of high regional significance, with 1991-1992 results corroborating previous season's totals.

Snow geese numbers stayed lower than some previous counts, with only 3,500 representing the seasonal peak on 20 February. However, while not technically in the study area, about 12,000 snow geese were in view to the east of East Point on 13 January 1991, as a vast flock was seen feeding in the Moores/Thompson's Beach area. This flock contained one Ross' goose, a first record for Cumberland County, seen by Clay Sutton. Canada goose numbers were erratic depending on how much of the local "Leesburg State Prison flock" was roosting on the river during the survey. Green-winged teal were still building at the survey's conclusion.

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Black ducks, a species of special concern, peaked on the early date of 11 January at a respectable 4,290, but a figure well below previous high counts. Correspondingly, mallards (at 2,180, 11 January) and northern pintail (at 850, 11 January) were also well below previously, recorded peaks. Once again, anticipated spring buildings for these species never occurred. Even so, Maurice River totals were regionally significant. (Of note is that while mainstem Maurice ducks were "down" in 1991-1992, in 1991-1992, Bob Barber felt that Manumuskin populations were much higher than normal this past winter. Perhaps for unknown reasons, a high percentage of the Maurice ducks had simply shifted to the tributaries this year. This would explain in part the low Maurice totals in 1991-1992. More study is needed).

Unique in the five years of this ongoing study were the sea duck concentrations in Delaware Bay in 1990-1991. While 1989-1990 was a precursor to this past winter, the vast flocks of sea ducks between Reed's Beach (Cape May County) and East Point during December and January were unprecedented in modern times. Feeding on a vast "set" or aggregation of two small clam species (*Macoma* [sp.] and *Mulinia laterallis* - fide Bob Barber, Rutgers University Oyster Research Laboratory), up to 15,000 scoter and scaup were visible to the east of East Point (near Thompson's Beach) on 13 January. This is undoubtedly the same vast flock which was originally off Reed's Beach in late December. In the Maurice River study area (Maurice River Cove), an estimated 1,000 scoters (of all three species) were present on 11 January, along with a spectacular 305 common goldeneye. These unique concentrations certainly augmented the expected waterfowl populations during the winter 1991-1992 adding to the diversity of the bay area in a dramatic way.

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Once again, as in 1990-1991, HA attempted a "check and balance" on our waterfowl census numbers by enumerating the dusk "downriver flight" passing down the river corridor to roost, presumably, near Egg Island Point. On 11 January, this dusk flight was counted from the Galetto dock, north of the Burcham dike. Between 4:15 p.m. and 5:30 p.m., 4,450 ducks were counted moving downriver high overhead. This compares highly favorably with the 4,750 estimated earlier that day for the stretch of river north of the site during the regular survey period and by regular survey methods. This constitutes just a 6.3% error when the two figures are compared. This favorable comparison of counts by two different methods adds credence and credibility to the estimated Maurice River waterfowl populations.

In summary, while waterfowl populations were lower than in previous winter surveys due to the record high winter temperatures and virtually no ice in the region, observed Maurice River populations were nonetheless of very high regional significance. These populations add extra urgency to the need for river protection. An extremely high percentage of Delaware Bay waterfowl rely on the Maurice River and its tributaries as wintering habitat.

The previously mentioned five year summary will compare and contrast waterfowl numbers as well, and will be forthcoming in late spring of 1992. It is vitally important to look at these waterfowl populations over time, and not rely too heavily on any one year's data. While 1991-1992 numbers were down, they are statistically comparable to previous year's averages.

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We sincerely thank Joe Usewicz for assistance with the East Point fall study, and Bob Barber for both his sightings and insight into wintering raptor and waterfowl populations. We thank CU for the opportunity to work with you again on this important project. Please call should you have any questions or comments regarding the project, this report, or the proposed five year summary. We look forward to submitting the long-term summary of this intriguing five-year project, and to continuing to participate in the evaluation and protection process on the Maurice River.

Sincerely,

HERPETOLOGICAL ASSOCIATES, INC.

Clay C. Sutton
Vice President and
Southern Regional Manager

James Dowdell
Staff Ornithologist

cc: Robert T. Zappalorti, President, HA
Richard Radis, Northern Regional Mgr.
Joann Frier-Murza, E&NSP-NJDEP&E
Larry Niles, E&NSP-NJDEP&E
Paul Kerlinger, CMBO

TABLE 1.

RAPTOR TOTALS 1991

PROJECT: East Point Hawkwatch - MONTH: Sept. → Dec., 1991

Autumn Migrants

	9/1	9/5	9/6	9/21	9/22	9/27	9/28	9/29	10/1	10/8	10/9	10/20	11/3	11/8	11/23	11/26	12/10	TOTAL	PEAK	DATE
BLACK VULTURE		(5)				1	2	4	2								5	14	5	11/26
TURKEY VULTURE	4	(30)	4	9	6	29	12	2	16	8	4	29	8	5			9	182	37	11/26
OSPREY	4	9	2		1	1	4	2	6	7	2	2						40	9	9/7
AM. SW-TAILED KITE																				
MISS. KITE																				
BALD EAGLE		11		1a		(10)	2i		1a	1i	2i	29i	2i	(10)	(31a)	6i	(27i)	18	6	11/26
N. HARRIER	3	3	8	6	1	4	2	3	8	8	7	13	7	5	1	31	6	116	31	11/26
SHARP-SHINNED				8	4	29	17	22	176	108	3	98	4	1		13	3	486	176	10/7
COOPER'S HAWK		3	1	1	1	6	6	7	16	21	2	14	2			3	2	85	21	10/8
N. GOSHAWK																	1i	1	1	12/10
RED-SH. HAWK												1					8	9	8	12/10
BROAD-WINGED		1									1	1						3	1	x3
SWAINSON'S																				
RED-TAILED	4	(7)		2	2	8	3	1	2	6	11	18	6	6		58	14	141	58	11/26
ROUGH-LEGGED												1a		1a	1a	3a	2a	8	3	11/26
GOLDEN EAGLE																1i		1	1	11/26
AM. KESTREL	4		10	15	10	20	3	8	38	9	2	7	2			1		129	38	10/7
MERLIN		1				2			5	4								12	5	10/7
PEREGRINE							1	2		1								4	2	9/29
OTHER / HOURS	13.5	13	14	13	11	15	11.5	14	13.5	15.5	12	12.5	12.5	12	12	16	SE Owl / 3.5	53.5		
TOTAL HAWKS	19	18	25	42	25	100	52	51	270	173	34	186	31	18	2	158	45	1249	270	10/7

53.5 hours over 17 days
23.3 hawks per hour

birds shown in parentheses were considered resident, or "locals", and are not included in totals for day or season.

TABLE 2.

RAPTOR TOTALS 1991-92

PROJECT: Maurice River MONTH: Wintering Raptors

Average does not include 3/21 Partial survey

	11/26	12/29	1/11	1/25	2/9	2/20	3/13	3/21*										PEAK	Ave
BLACK VULTURE	16	7	45		3	7	5	13										45	9
TURKEY VULTURE	88	160	76	56	52	46	76	15										160	79
OSPREY								2										2	-
AM. SW-TAILED KITE																			
MISS. KITE																			
BALD EAGLE	60	3 ³⁰ ₄₁	10 ⁶⁰ ₄₁	7 ¹⁰ ₆₁	31	51	7 ⁴⁰ ₃₁	11										10	6
N. HARRIER	31	23	30	20	15	31	19	7										3(2)	24
SHARP-SHINNED	13	7	1	1	2		1	1										13	4
COOPER'S HAWK	3	1		1	2	1		2										3	1.5
N. GOSHAWK																			
RED-SH. HAWK							1											1(x2)	-
BROAD-WINGED																			
SWAINSON'S																			
RED-TAILED	58	26	48	27	45	45	41	10										58	41
ROUGH-LEGGED	3	2	2	1	1	1	1											3	1.5
GOLDEN EAGLE	11																	1	-
AM. KESTREL	1	5	4		2	3	3	1										5	3
MERLIN																			
PEREGRINE								1 ^a										1	-
OTHER				1 Accip (sp)	1 SE Owl	2 SE Owl	1 SE Owl												
TOTAL HAWKS	213	234	216	114	125	139	154	53*										(334)	171

* 3/21 - Partial Survey Only, Maurice River Bridge to Galetto dock
 Bald Eagles also seen on non-survey dates: Nov. 22(6), Nov. 24(2), Feb. 19(1), Feb. 28(1), March 3(1).
 Cooper's Hawks also seen on non-survey dates: Jan. 13 and Feb. 28
 Short-eared Owl seen on Jan. 13

TABLE 3
WINTERING WATERFOWL - MAURICE RIVER
1991 - 1992

	<u>11/26</u>	<u>12/29</u>	<u>1/11</u>	<u>1/25</u>	<u>2/09</u>	<u>2/20</u>	<u>3/03</u>
Tundra Swan			3				
Mute Swan	7	3	17	2	7	21	12
Snow Goose	199	2765	3200	2880	3000	3500	950
Brant				25			
Canada Goose	200		260	1000	130	130	24
Wood Duck		3					2
Green-winged Teal	3	2	10	8	1	539	562
American Black Duck	1737	1335	4290	1614	1431	1756	1715
Mallard	810	806	2180	689	497	666	277
Northern Pintail	94	78	850	400	70	174	199
Gadwall		1	5		4		11
American Wigeon			3			5	10
Ring-necked Duck							4
Great Scaup	40	2					6
Lesser Scaup	1						
Oldsquaw		3	4	1			
Black Scoter }							
}							
Surf Scoter }		100	1000	1			
}							
White-winged }							
Scoter }							

TABLE 3 - (CONTINUED)

	<u>11/26</u>	<u>12/29</u>	<u>1/11</u>	<u>1/25</u>	<u>2/09</u>	<u>2/20</u>	<u>3/30</u>
Common Goldeneye	2	55	305	100	262	2	
Bufflehead	108	62	2	8	51	38	55
Hooded Merganser	1			1	2		3
Common Merganser					1	1	
Red-breasted Merganser	1	19	10	3	62	9	8
TOTAL WATERFOWL	3203	5234	12139	6732	5518	6841	3838

TABLE 4

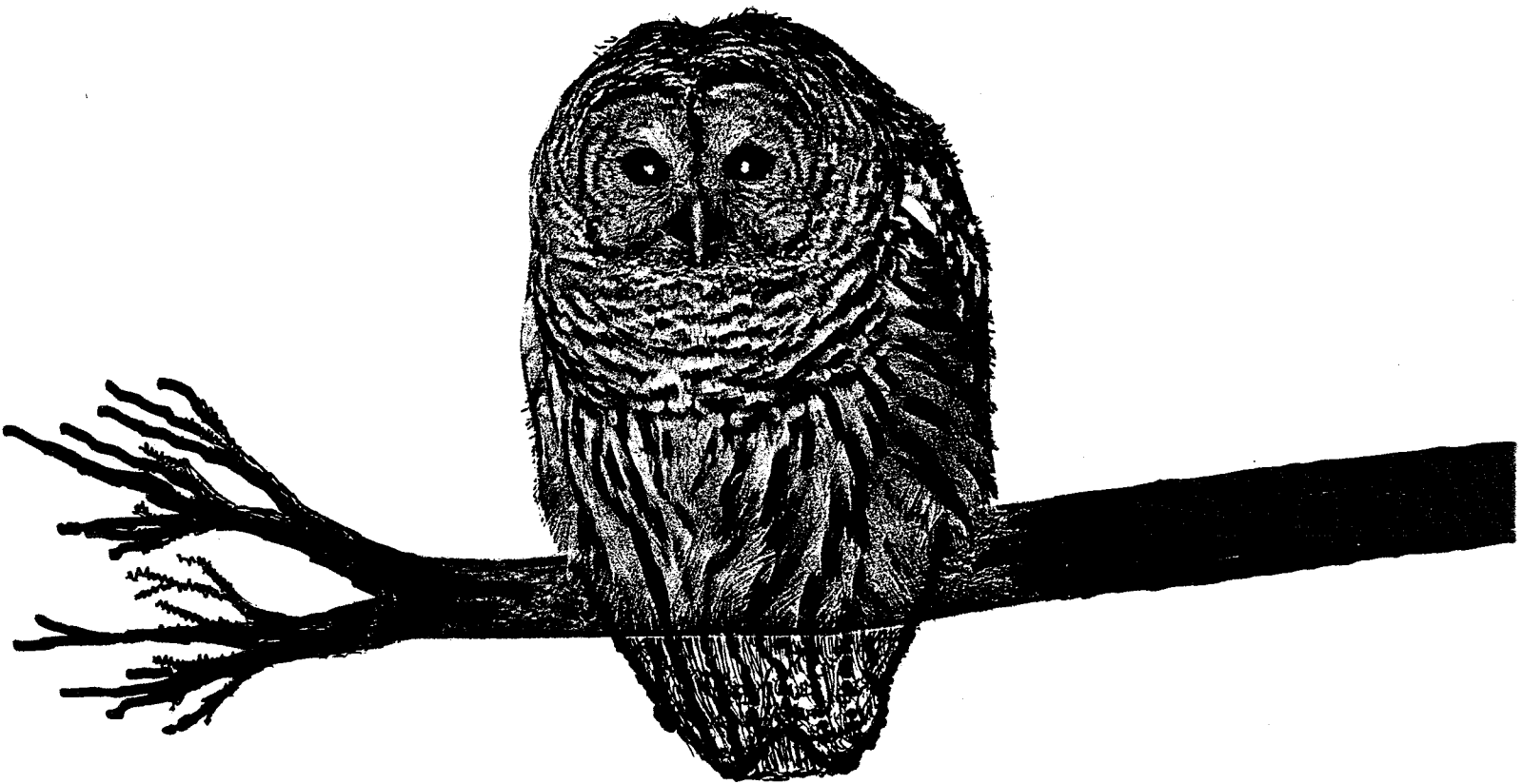
**PEAK WATERFOWL TOTALS
WINTERING WATERFOWL ON THE MAURICE RIVER,
WINTER 1991 - 1992**

Tundra Swan	3	Gadwall	11
Mute swan	21	American Widgeon	10
Snow Goose	3500	Ring-necked Duck	4
Brant	25	Greater Scaup	6
Canada Goose	1000	Lesser Scaup	1
Wood Duck	3	Scaup (Species)	40
Green-winged Teal	562	Old Squaw	4
American Black Duck	4290	Scoter (Species)	1000
Mallard	2180	Common Goldeneye	305
Northern Pintail	850	Bufflehead	108
Gadwall	11	Hooded Merganser	3
Common Merganser	1	Red-breasted Merganser	62

TOTAL WATERFOWL: 12,139 (January 11, 1992)

MINIMUM of 13,989 waterfowl present (aggregate totals - highest number of each species recorded).

BARRED OWL, a "Threatened" Species



HERPETOLOGICAL ASSOCIATES, INC.
WILDLIFE CONSULTANTS