

# Piping Plover Nesting Results in New Jersey: 2010

Provided by

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Photo courtesy of Chris Davidson

One hundred eight (108) pairs of piping plovers nested in New Jersey in 2010. This represents a slight (3%) increase from 2009 (105 pairs), but essentially the population trend has been flat the past three years (111, 105, and 108 pairs in 2008, 2009, and 2010, respectively). The 2010 population was below the average number of pairs in the years since federal listing (120 pairs).

The total number of adults recorded for the entire nesting season (226) was nearly the same as the total adult count during the date-restricted survey conducted June 1-9 (223). The number of pairs tallied during the entire nesting season (108) was somewhat higher than those counted during the date-restricted survey (101), which is a typical pattern in New Jersey. Slight variations in the methodologies used by the U.S. Fish and Wildlife Service (USFWS)—Edwin B. Forsythe National Wildlife Refuge (NWR) in tabulating breeding pairs during the date-restricted survey account for most of the difference between the final season and the census pair counts.

The northern Monmouth County region accounted for nearly half (48%) of the pairs in the state. Furthermore, most of those pairs nested at Sandy Hook (45 pairs or 42% of the statewide total). Although this concentration of piping plovers is not unexpected given strong productivity in that region relative to the rest of the state in recent years, it represents a disproportionate distribution of nesting pairs in the state, which could be problematic if the trend continues. The next highest concentration of piping plovers in the state was the region comprised of Holgate, Little Beach, and North Brigantine Natural Area with 26 pairs (24% of the statewide total). The southernmost region of the state from Stone Harbor Point to Cape May Point saw the biggest decline in nesting pairs (20 pairs in 2010 compared to 29 in 2009, a 31% drop).

For the most part, there were only minor fluctuations in pair counts at individual sites compared to last year and in most cases the differences appear to be accounted for by shifts within the region. However, there were some notable changes at individual sites in the southernmost region of the state. Stone Harbor Point decreased to 9 pairs in 2010, compared to 15 pairs in 2009, not surprising given the persistent poor reproductive success at the site in recent years. Cape May Meadows, with 8 pairs, recorded its first drop in pairs after a fairly steady increase in recent years linked to a habitat restoration project at the site that benefited plovers and robust productivity that resulted from the enhanced habitat conditions.

Pairs nested at 22 sites statewide, the same as in 2009, but well below the peak count of 30 sites recorded in both 2004 and 2005. The New Jersey Division of Fish and Wildlife (NJDFW), with support from the Conserve Wildlife Foundation of New Jersey (CWFNJ), monitored 11 of the active nesting sites (50% of the sites statewide). This accounted for 34 nesting pairs or just 31% of the statewide total, the lowest percentage since coordinated statewide monitoring began. In addition to the active nesting sites, NJDFW regularly monitored 12 other potential breeding sites. Although no nests were found at those other sites, either some breeding activity or birds were detected at half (6) of those sites, resulting in more extensive monitoring. The National Park Service (NPS) monitored seven active sites within Gateway National Recreation Area-Sandy Hook Unit and one site at an adjacent Coast Guard Station. The USFWS - Edwin B. Forsythe NWR monitored two active sites (Holgate and Little Beach). The USFWS - Cape May NWR monitored two adjacent sites (Two-Mile Beach-Cape May NWR and Coast Guard-LSU), although only the LSU site had active breeding. The Nature Conservancy (TNC) co-monitored one active nesting site, the portion of Cape May Meadows they own.

Pair-nest success (the percentage of pairs that successfully hatch young from at least one nest) was particularly high in 2010 on a statewide basis (84% vs. 66% in 2009). It was well above the average for the period since federal listing (65%) and one of the highest levels ever recorded. Furthermore, pair-nest success was more or less strong at sites across the entire coastal region. Looking at only NJDFW-monitored sites, pair-nest success was also very high in 2010 compared to 2009 (79% and 52%, respectively). The lack of any significant flooding events was the primary reason for the high hatch success. Low predator activity at Sandy Hook and at some other sites, also played a role.

The statewide fledgling rate, which incorporates data collected by all the state cooperators (NJDFW, CWFNJ, USFWS, NPS, and TNC) was 1.39 fledges per pair, significantly higher than in 2009 (1.05 fledges/pair) and one of the highest ever recorded on a statewide basis. Productivity at NJDFW-monitored sites (0.94 fledges/pair for 34 pairs) was well below the statewide average, but was nearly twice the NJDFW-monitored rate in 2009 (0.48 fledges/pair). This was the first year since 2001 and one of the few years overall since federal listing that New Jersey's statewide productivity was above the 1.24 fledges/pair range wide threshold for population maintenance established in the USFWS Recovery Plan for the Atlantic Coast population of piping plovers (USFWS, 1996). Because New Jersey's population trend is closely correlated to productivity in the prior year (or two), one would reasonably expect a population increase next year, if sufficient suitable habitat remains in the state. However, one mitigating factor that bears close scrutiny is whether the BP Gulf of Mexico oil spill will have any impact on piping plover survival rates. Although it is not clearly known what percentage of New Jersey's breeding population winters in the Gulf of Mexico, a sizeable portion of the overall population winters along the Gulf, so there is potential for adverse impacts on our local population.

Productivity varied by individual site and region, which is a typical pattern. The northern Monmouth County region fledged 1.62 chicks per pair (52 pairs), which was above the USFWS recovery goal (1.50 fledges/pair). Over half (56% or 84 out of 150) of the fledges produced statewide came from the northern Monmouth County region alone. The high productivity in that region, especially Sandy Hook (1.76 fledges/pair for 45 pairs), drove productivity for the entire state, although there were some other areas where robust productivity was recorded as well. The region comprised of Holgate, Little Beach, and North Brigantine Natural Area recorded productivity of 1.42 fledges per pair (26 pairs), also approaching the USFWS recovery goal. Likewise, productivity at Stone Harbor Point (1.44 fledges/pair for 9 pairs) nearly attained the USFWS recovery goal, which is

particularly notable for that site because it has typically had very low productivity. Cape May Meadows, a site with strong productivity since 2003 (although it was somewhat reduced in 2008 and 2009), also fared fairly well in 2010 with 1.25 chicks fledged per pair (8 pairs). The southern region of the state (Stone Harbor Point to Cape May Point) pooled together produced 1.20 fledges per pair (20 pairs), somewhat below the state as a whole, but a substantial increase over 2009 when just 0.48 chicks fledged per pair from this region.

Factors that impacted piping plover productivity varied considerably by site. Abandonment accounted for just over one-third (37%) of the nest failures statewide. Such a high percentage of abandoned nests would typically be a major concern, however, because of the high hatch success this year, the number of abandoned nests was actually low (11). Flooding was the next highest known cause of nest failure (23% of failed nests), but because this represents such a small number (7) of failed nests, flooding was not a significant factor limiting hatch success this year. Nest failure due to depredation was low this year (17% of failed nests). The cause of nest failure could not be determined for about a quarter (23%) of the failed nests. Causes of brood loss remain very difficult to determine and track and no statewide trend was detected this year.

### **Literature Cited**

U.S. Fish & Wildlife Service. 1996. Piping Plover (*Charadrius melodus*), Atlantic Coast Population, Revised Recovery Plan. Hadley, MA. 258 pp.

**Table 1. Number of pairs of piping plovers at New Jersey nesting sites: 2001-2010.**

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
<i>Sandy Hook NRA</i>	31	35	38	32	22	22	30	32 <sup>3</sup>	35	45
<i>Coast Guard</i>	6	7	8	7	3	4	4	4	4	5
<i>North Beach</i>	11	9	9	10	6	4	8	8	9	13
<i>North Gunnison</i>	3	4	5	3	2	3	4	7	9	9
<i>South Gunnison</i>	0	1	1	1	0	0	1	2	5	5
<i>Critical Zone</i>	1	2	4	3	3	3	4	4	2	6
<i>Hidden Beach</i>	3	5	4	3	3	3	4	2	3	3
<i>Fee Beach</i>	7	7	6	4	4	4	4	5 <sup>3</sup>	3	3
<i>South Fee Beach</i>	0	0	1	1	1	1	1	2 <sup>3</sup>	0	1
Sea Bright North	3	5	7	5	7	7	8	8	6	3
Monmouth Beach North	4	3	2	4	3	3	1	1	1	2
Monmouth Beach South	1	1	0	0	0	0	0	0	0	0
Seven Presidents Park	0	0	1	1	1	2	3	3	2	2
Long Branch	0	0	1	0	0	0	0	0	0	0
<b>Region 2 subtotal</b>	<b>39</b>	<b>44</b>	<b>49</b>	<b>42</b>	<b>33</b>	<b>34</b>	<b>42</b>	<b>44</b>	<b>44</b>	<b>52</b>
Sea Girt - Wreck Pond	0	0	1	1	1	0	1	0	1	0
Sea Girt - NGTC	0	1	0	0	0	0	1	0	0	0
Island Beach SP - Dike	0	0	2	3	2	0	0	0	0	0
Barnegat Light	2	3	3	3	4	3	4	3	1	3
<b>Region 3 subtotal</b>	<b>2</b>	<b>4</b>	<b>6</b>	<b>7</b>	<b>7</b>	<b>3</b>	<b>6</b>	<b>3</b>	<b>2</b>	<b>3</b>
<i>Holgate</i>	19	14	13	16	13	16	14	11	7	10
<i>Little Beach</i>	12	17	19	19	11	12	17	12	10	13
North Brigantine NA	12	15	17	8	8	8	8	8	6	3
<b>Region 4 subtotal</b>	<b>43</b>	<b>46</b>	<b>49</b>	<b>43</b>	<b>32</b>	<b>36</b>	<b>39</b>	<b>31</b>	<b>23</b>	<b>26</b>
Brigantine - Inlet (Cove)	0	1	0	0	0	0	0	0	0	0
Seaview Harbor Marina	0	0	0	0	1 <sup>3</sup>	0	0	0	0	0
Ocean City - North	8	8	2	1	1 <sup>3</sup>	0	0	0	0	0
Ocean City - Center	9	8	8	8	5	7	4	3	1	0
<b>Region 5 subtotal</b>	<b>17</b>	<b>17</b>	<b>10</b>	<b>9</b>	<b>6</b>	<b>7</b>	<b>4</b>	<b>3</b>	<b>1</b>	<b>0</b>
Corson's Inlet SP	1	1	2	3	2	2	2	1	2	0
Strathmere NA	0	0	0	0	1	1	0	0	0	1
Strathmere (Upper Twp.)	0	0	1	1	1	0	0	0	0	1
Whale Beach	0	1	0	0	0	0	0	0	0	0
Sea Isle - South	1	0	0	0	0	0	0	0	0	0
Townsend's Inlet	1	1	1	1	1	0	0	0	0	0
Avalon - North	1	0	0	0	0	0	0	0	0	0
Avalon - Dunes	4	7	8	8	5	4	5	4	4	5
<b>Region 6 subtotal</b>	<b>8</b>	<b>10</b>	<b>12</b>	<b>13</b>	<b>10</b>	<b>7</b>	<b>7</b>	<b>5</b>	<b>6</b>	<b>7</b>
Stone Harbor Point	5	6	6	9	10	17	17	11	15	9
Champagne Island	0	0	0	1	1	2	1	0	0	0
N. Wildwood - Hereford	0	3	3	4	3	3	2	1	2	2
<i>Two-Mile Beach</i>	1	2	2	1	1	1	2	0	0	1
<i>Cape May NWR</i>	0	0	0	0	0	0	1	0	0	0
<i>Coast Guard - LSU<sup>1</sup></i>	1	2	2	1	1	1	1	0	0	1
Coast Guard - TRACEN	2	3	4	1	3	0	2	1	0	0
Cape May City	2	1	0	1	0	0	0	1	1	0
Cape May Meadows	3	2	3	4	5	6	7	11	11	8
<i>The Nature Conservancy</i>	2	2	2	1	4 <sup>3</sup>	3	4	7	7	5
<i>Cape May Point SP<sup>2</sup></i>	1	0	1	3	2 <sup>3</sup>	3	3	4	4	3
<b>Region 7 subtotal</b>	<b>13</b>	<b>17</b>	<b>18</b>	<b>21</b>	<b>23</b>	<b>29</b>	<b>31</b>	<b>25</b>	<b>29</b>	<b>20</b>
<b>Total Pairs</b>	<b>122</b>	<b>138</b>	<b>144</b>	<b>135</b>	<b>111</b>	<b>116</b>	<b>129</b>	<b>111</b>	<b>105</b>	<b>108</b>
<b>Pairs at NJDFW sites</b>	<b>57</b>	<b>68</b>	<b>70</b>	<b>66</b>	<b>61</b>	<b>62</b>	<b>62</b>	<b>49</b>	<b>46</b>	<b>34</b>

<sup>1</sup> Prior to 2002 this site was co-monitored by NJDFW.

<sup>2</sup> Starting in 2003 this site was monitored by NJDFW.

<sup>3</sup> The same pair nested at two nearby sites. Therefore "subtotals" and "totals" will be less than sum of individual sites. Note: Sites in italics were monitored by agencies other than NJDFW: Sandy Hook NRA by the National Park Service, Holgate and Little Beach by USFWS - Edwin B. Forsythe NWR, Two-Mile Beach by USFWS - Cape May NWR, and Cape May Meadows-TNC by The Nature Conservancy - Delaware Bayshores Office.

**Table 2. New Jersey piping plover window census results: June 1-9 2010.**

	State Census Count			Final Season Count		
	# Pairs	# Unpaired Adults	# Total Adults	# Pairs	# Unpaired Adults	# Total Adults
Sandy Hook Coast Guard	5	0	10	5	0	10
Sandy Hook North Beach	12	0	24	13	0	26
Sandy Hook North Gunnison	8	0	16	9	0	18
Sandy Hook South Gunnison	5	0	10	5	0	10
Sandy Hook Critical Zone	4	0	8	6	0	12
Sandy Hook Hidden Beach	3	0	6	3	0	6
Sandy Hook Fee Beach	3	0	6	3	0	6
Sandy Hook South Fee Beach	1	0	2	1	0	2
Sea Bright North	4	0	8	3	1	7
Monmouth Beach North	1	0	2	2	0	3 <sup>1</sup>
Monmouth Beach South	0	0	0	0	0	0
Seven Presidents Park	1	1	3	2	0	4
Long Branch	0	0	0	0	0	0
<b>Region 2 subtotal</b>	<b>47</b>	<b>1</b>	<b>95</b>	<b>52</b>	<b>1</b>	<b>104</b>
Belmar - Shark River Inlet	0	1	1	0	0	0
Sea Girt - Wreck Pond	0	0	0	0	0	0
Sea Girt - NGTC	0	0	0	0	0	0
Island Beach SP - Dike	0	0	0	0	0	0
Barnegat Light	2	0	4	3	0	6
<b>Region 3 subtotal</b>	<b>2</b>	<b>1</b>	<b>5</b>	<b>3</b>	<b>0</b>	<b>6</b>
Holgate	9	7	25	10	5	25
Little Beach	9	12	30	13	4	30
North Brigantine NA	5	0	10	3	0	6
<b>Region 4 subtotal</b>	<b>23</b>	<b>19</b>	<b>65</b>	<b>26</b>	<b>9</b>	<b>61</b>
Brigantine Beach	0	0	0	0	0	0
Brigantine - Inlet (Cove)	0	0	0	0	0	0
Seaview Harbor Marina	0	0	0	0	0	0
Ocean City - North	0	0	0	0	0	0
Ocean City - Center	0	0	0	0	0	0
<b>Region 5 subtotal</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Corson's Inlet SP	0	0	0	0	0	0
Strathmere Natural Area	1	0	2	1	0	2
Strathmere (Upper Twp.)	1	0	2	1	0	2
Townsend's Inlet	0	0	0	0	0	0
Avalon - North	0	0	0	0	0	0
Avalon - Dunes	6	0	12	5	1	11
Stone Harbor - Oceanfront	0	0	0	0	0	0
<b>Region 6 subtotal</b>	<b>8</b>	<b>0</b>	<b>16</b>	<b>7</b>	<b>1</b>	<b>15</b>
Stone Harbor Point	10	0	20	9	0	18
N. Wildwood - Hereford Inlet	1	0	2	2	0	3 <sup>1</sup>
2-Mile Beach - USFWS	0	0	0	0	0	0
2-Mile Beach - LSU	1	0	2	1	0	2
Coast Guard - TRACEN	0	0	0	0	0	0
Cape May City	0	0	0	0	0	0
Cape May Meadows - TNC	5	0	10	5	0	10
Cape May Meadows - CMPSP	4	0	8	3	1	7
Cape May Point Borough	0	0	0	0	0	0
<b>Region 7 subtotal</b>	<b>21</b>	<b>0</b>	<b>42</b>	<b>20</b>	<b>1</b>	<b>40</b>
<b>Total</b>	<b>101</b>	<b>21</b>	<b>223</b>	<b>108</b>	<b>12</b>	<b>226<sup>1</sup></b>

<sup>1</sup> The total number of adults does not equal the sum of “# Pairs” and “# Unpaired Adults” because two sites had two pairs that only consisted of 3 total adults.

**Table 3. New Jersey piping plover nesting summary by sites: 2010.**

SITE	2010					
	Pairs	Pairs Hatched	Chicks Fledged	Pair Success	Fledge Rate	SP Fledge Rate
Sandy Hook NRA	45	40	79	0.89	1.76	1.98
<i>Coast Guard</i>	5	4	9	0.80	1.80	2.25
<i>North Beach</i>	13	11	24	0.85	1.85	2.18
<i>North Gunnison</i>	9	9	10	1.00	1.11	1.11
<i>South Gunnison</i>	5	5	13	1.00	2.60	2.60
<i>Critical Zone</i>	6	4	3	0.67	0.50	0.75
<i>Hidden Beach</i>	3	3	10	1.00	3.33	3.33
<i>Fee Beach</i>	3	3	8	1.00	2.67	2.67
<i>South Fee Beach</i>	1	1	2	1.00	2.00	2.00
Sea Bright North	3	2	4	0.67	1.33	2.00
Monmouth Beach North	2	0	0	0.00	0.00	0.00
Seven Presidents Park	2	1	1	0.50	0.50	1.00
<b>Region 2 Subtotal</b>	<b>52</b>	<b>43</b>	<b>84</b>	<b>0.83</b>	<b>1.62</b>	<b>1.95</b>
Barnegat Light	3	3	2	1.00	0.67	0.67
<b>Region 3 Subtotal</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>1.00</b>	<b>0.67</b>	<b>0.67</b>
Holgate	10	9	15	0.90	1.50	1.67
Little Beach	13	9	15	0.69	1.15	1.67
North Brigantine NA	3	3	7	1.00	2.33	2.33
<b>Region 4 Subtotal</b>	<b>26</b>	<b>21</b>	<b>37</b>	<b>0.81</b>	<b>1.42</b>	<b>1.76</b>
Strathmere NA	1	1	2	1.00	2.00	2.00
Strathmere (Upper Twp)	1	1	1	1.00	1.00	1.00
Avalon Dunes	5	5	0	1.00	0.00	0.00
<b>Region 6 Subtotal</b>	<b>7</b>	<b>7</b>	<b>3</b>	<b>1.00</b>	<b>0.43</b>	<b>0.43</b>
Stone Harbor Point	9	8	13	0.89	1.44	1.63
N. Wildwood - Hereford	2	0	0	0.00	0.00	0.00
<i>Coast Guard - LSU</i>	1	1	1	1.00	1.00	1.00
Cape May Meadows	8	8	10	1.00	1.25	1.25
<i>The Nature Conservancy</i>	5	5	8	1.00	1.60	1.60
Cape May Point SP	3	3	2	1.00	0.67	0.67
<b>Region 7 Subtotal</b>	<b>20</b>	<b>17</b>	<b>24</b>	<b>0.85</b>	<b>1.20</b>	<b>1.41</b>
<b>All NJ sites TOTAL</b>	<b>108</b>	<b>91</b>	<b>150</b>	<b>0.84</b>	<b>1.39</b>	<b>1.65</b>
<b>NJDFW sites TOTAL</b>	<b>34</b>	<b>27</b>	<b>32</b>	<b>0.79</b>	<b>0.94</b>	<b>1.19</b>
<b># Active Sites</b>	<b>22</b>					

Data for Sandy Hook NRA provided by the National Park Service.

Date for Holgate and Little Beach provided by U.S. Fish and Wildlife Service - Edwin B. Forsythe NWR.

Data for Two-Mile Beach provided by U.S. Fish and Wildlife Service - Cape May NWR.

Data for Cape May Meadows-TNC provided by The Nature Conservancy - Delaware Bayshores Office.

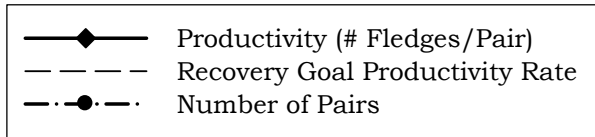
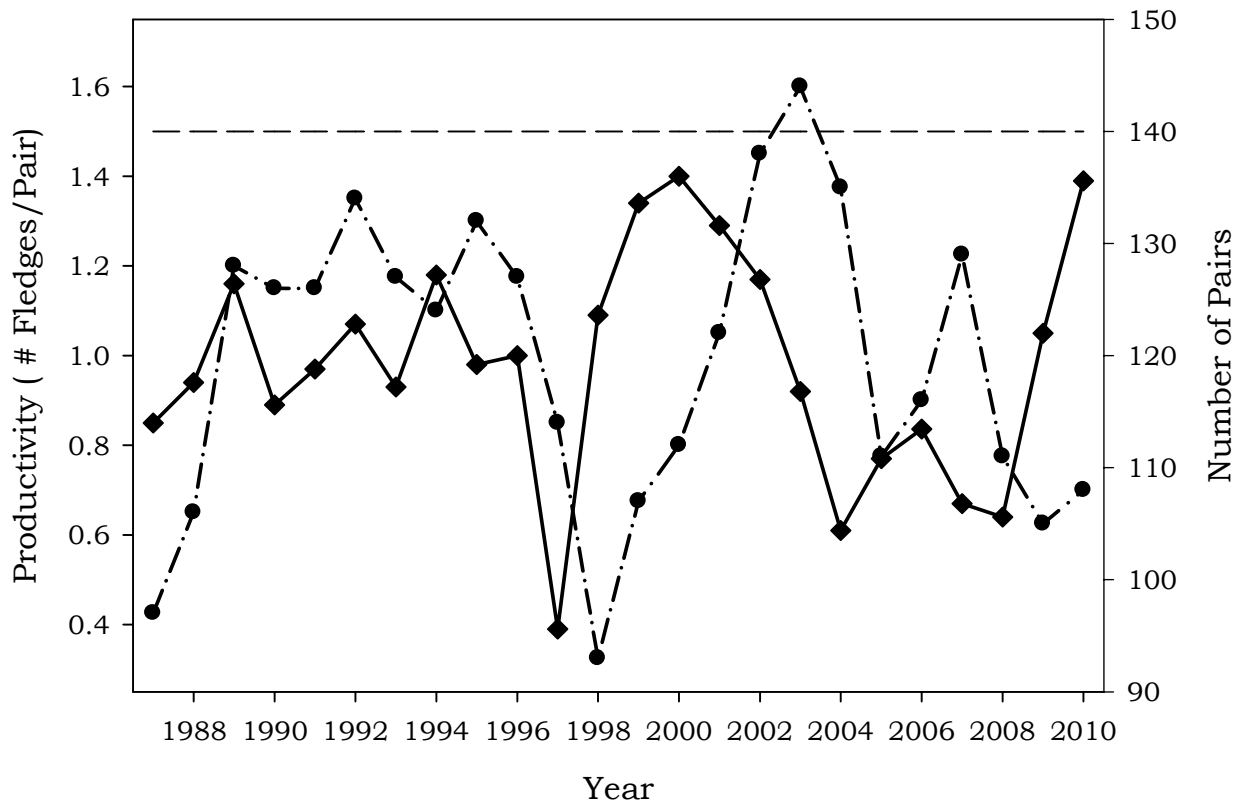
All other data provided by N.J. Division of Fish and Wildlife - Endangered and Nongame Species Program.

**Pair Success** equals the percentage of pairs that hatched young (at least one chick observed).

**Fledge Rate** equals the number of chicks fledges per pair.

**Successful Pair (SP) Fledge Rate** equals the number of chicks fledged per pair that successfully hatched young.

**Figure 1. New Jersey piping plover population and productivity: 1987- 2010.**



**Figure 2. Causes of piping plover nest failure in New Jersey: 2010.**

**N = 30**

