

Cooperator Ruffed Grouse & American Woodcock Hunting Log



During the 2014-15 ruffed grouse and American woodcock hunting seasons, 271 hunters recorded their daily hunting activities, including the number of birds flushed, the number of hours hunted, the number of birds killed, and if a dog was used to hunt grouse and woodcock. The primary purpose of the log is to monitor the number of birds flushed per hour. Changes in the flush rate illustrate trends in the grouse and woodcock populations when viewed over a long period of time and will provide insight into statewide distributions for these popular game species as habitats change both locally and on a landscape scale.

We thank all the hunters that participated in this survey during the 2014-15 seasons.

Results from the 2014-15 Season

During the 2014-15 season, participants reported data from almost 2,500 hunting trips across the state, from the lower Hudson Valley in the south, to the Adirondacks and St. Lawrence Valley in the north, and the Lake Plains and Allegheny Plateau in far western New York. They spent almost 6,900 hours afield and flushed 4,900 grouse (about 0.7 flushes/hour) and almost 2,500 woodcock (about 0.5 flushes/hour). Findings from the 2014-15 season include:

Grouse Hunting

- Hunters participating in the survey averaged about 25 hours afield during the 2014-15 season. They took about 9 trips afield for the season and spent about 3 hours afield per trip (Table 1).
- Grouse log participants averaged about 18 grouse flushed per hunter for the 2014-15 season and had to spend about one hour and 24 minutes hunting in order to flush one grouse. In addition, hunters averaged about 1.5 birds harvested for the season and had to invest over 17 hours of hunting effort to harvest one grouse. On average, one out of every 12 grouse flushes resulted in a kill (an 8.1% success rate; Table 1).
- Just over 75% of the effort expended by hunters occurred during the first half of the season (September - November; Table 2). In addition, about 80% of the grouse flushed and 75% of the grouse harvested occurred during this early part of the season, but the flush rate was similar between the early and late portions of the season.
- Slightly more effort was expended by hunters on public lands, and the number of grouse flushed was slightly higher there (Table 3); however, the flush rates on public and private lands were similar (about 0.7 flushes/hour).
- Overall, there was far more effort expended in the southern grouse season zone than the northern season zone (over 70% of the total), but the flush rate was lower in the southern zone (about 0.67 flushes/hour vs. 0.80 flushes/hour; Table 4).
- Hunting effort was well distributed across major geographic regions of New York State. About 42% of the hunting effort took place in western New York (34% Appalachian Hills & Plateau Ecozone, 8% Lake Plains Ecozone), about 26% in northern New York (18% Adirondacks-Tug Hill Ecozone, 5% St. Lawrence Valley Ecozone, 3% Champlain Valley Ecozone), and about 31% in the

southeastern part of the state (18% Catskills-Delaware Hills, 13% Mohawk Valley-Hudson-Valley-Taconic Highlands; Table 5; see Figures 1 and 2 for regions referred to here).

- The flush rate was highest in the Catskills-Delaware Hills ecozone (about 0.98 grouse flushed/hour), followed by the Adirondacks-Tug Hill and St. Lawrence Valley ecozones, respectively (0.86 and 0.83 birds flushed/hour). The rest of the ecozones were similar to or below the annual statewide average of 0.70 grouse flushed/hour (Table 5, Figures 1 and 2).
- Most hunters that participated in the survey used a dog to hunt grouse (Table 6). In general, hunters that used a dog flushed and harvested more grouse and had a higher flush rate (0.78 grouse flushed/hour) than hunters that did not use a dog (0.59 grouse flushed/hour).

Woodcock Hunting

- Analyses for woodcock data were restricted to 20 September through 30 November. This represents the period in which resident and migrating woodcock were in New York and accounted for 99% of all the woodcock observations during the survey. The results presented in this report are based on 1,873 trips and 5,282 hours afield by 252 hunters.
- Hunters participating in the survey averaged almost 21 hours afield during the 2014 woodcock season. They took about 7 trips afield for the season and spent about 3 hours afield per trip (Table 1).
- Survey participants averaged about 10 woodcock flushed per hunter for the 2014 season and had to spend just over 2 hours hunting in order to flush one woodcock. In addition, hunters averaged 2 birds harvested for the season and had to invest over 10 hours of hunting effort to harvest one woodcock. On average, one out of every 5 woodcock flushes resulted in a kill (a 20% success rate; Table 1).
- Hunting effort was evenly distributed over the 45-day season (Table 7), with a peak in effort in early October. More birds were flushed during the third week of October than during any other week of the season, and this week coincided with the highest observed flush rate (0.83 birds flushed/hour; Table 7). The overall flush rate from 20 September through 30 November was 0.53 birds/hour.
- There was more hunting effort and woodcock flushed and killed on public land than on private land, but the flush rate was higher on private land (0.61 vs. 0.47 woodcock flushed/hour; Table 3).
- There was more hunting effort and woodcock flushed and killed in the southern zone than in the northern zone, but the flush rate was similar between the northern and southern zones (about 0.5 woodcock flushed/hour; Table 4).
- The flush rate was highest in the Lake Plains Ecozone (0.86 woodcock flushed/hour), followed by the St. Lawrence Valley Ecozone (0.60 woodcock flushed/hour). Several other ecozones were close to the statewide average flush rate (0.53 birds flushed/hour), with the exception of the Champlain Valley and Mohawk Valley-Hudson Valley-Taconic Highlands ecozones, which were below the statewide average (Table 8, Figure 4).
- Most hunters that participated in the survey used a dog to hunt woodcock (Table 6). Hunters that used a dog flushed and harvested more woodcock and had a higher flush rate (0.73 birds flushed/hour) than hunters that did not use a dog (0.14 birds flushed/hour).

Comparing 2014-15 to Previous Seasons

Ruffed Grouse

- Over the past 11 seasons, over 1,200 hunters have participated in this survey. They have taken over 31,000 trips afield, spent almost 87,000 hours pursuing grouse, flushed over 84,000 birds, and harvested roughly 7,200 grouse. During this time period, the average flush rate was 1 grouse flushed/hour.
- Summary statistics for hunter effort (trips/hunter, hours/hunter) during the 2014-15 season were similar to the previous season and were below the long-term average. Indices for grouse abundance (flushes/hunter, flushes/hour) were lower than 2013-14 and below the long-term average. The amount of time spent afield to harvest a grouse has increased the past five seasons from 14 hours in 2011-12 to over 17 hours in 2014-15 (Table 1).
- Flush rates declined from 2013-14 to 2014-15 in four of seven ecozones (Figure 1). The flush rate was similar over the last two years in the Catskills-Delaware Hills and Mohawk Valley-Hudson Valley-Taconic Highlands ecozones, and increased slightly in the St. Lawrence Valley ecozone.
- Over the past 11 seasons, trends in grouse populations statewide and in major ecozones have resembled a “bell-shaped curve” that peaked around 2009 (Figure 1). It is unclear whether this is illustrative of the grouse population “cycles” that have been observed in other states. It is also unclear whether the increasing trend from 2011 through 2014 in the Adirondacks-Tug Hill, and 2012 through 2014 in the Catskills-Delaware Hills and St. Lawrence Valley, indicate a recovering grouse populations in those regions or are just a brief “up-tick” in a longer downward trend. Continued monitoring through this and other surveys will help clarify these observations.
- The 2014-15 survey results emphasize a “focus area” for grouse in the central part of the state from the St. Lawrence Valley south through the Catskills. When data are analyzed across the 11 years of the survey, they highlight other areas outside of this core region that will also benefit from active habitat protection, management, or restoration. Improving habitat in or close to regions with high quality habitat has a better chance at improving grouse populations than habitat management in regions devoid of high quality grouse habitat. There are several Wildlife Management Units along the southern tier in DEC Regions 8 and 9 that have relatively good grouse populations that would benefit from habitat management efforts (Figure 3).

American Woodcock

- The flush rate in 2014 was down from 2013, but close to the average from the previous four years (Figure 6).
- It is interesting to note that during the last two seasons the highest flush rate for woodcock has been in the Lake Plains ecozone (Figure 6). In contrast, this is an area of the state that consistently has among the lowest flush rates for ruffed grouse. The migratory nature of woodcock means that this species can find isolated patches of early successional habitat such as young forests and shrublands, whereas ruffed grouse are more dependent upon a landscape with a preponderance of high-quality habitat. This results in there being relatively fewer grouse in the Lake Plains compared to a region like the Catskills-Delaware Hills ecozone where there is a higher proportion of the landscape that is in an early stage of succession.

- In the spring “Singing-ground Survey” (SGS) coordinated by the U.S. Fish and Wildlife Service the number of singing males per route (i.e., the “breeding index”) in New York from 2010 to 2012 was 3.01, 2.76, and 2.86 males, respectively, so over this short time span the SGS conducted in the spring and the flush rate from the hunter’s log were correlated. This relationship did not continue in 2013 as the singing males index was similar to the previous season (2.85), but the flush rate in the fall increased to 0.70 birds flushed/hour from 0.58 the previous year. This was likely due to good recruitment during summer 2013 as evidenced by the increase in the number of juveniles per adult in the fall 2013 harvest. From 2013 to 2014 there was a decrease in the breeding index, and this was reflected in the decline in the flush rate from 0.70 to 0.53 birds flushed/hour. The breeding index increased from 2014 to 2015, but it remains to be seen whether this will translate to an improved flush rate this fall.
- Three of the last five years the peak of woodcock migration occurred during the last week of October, with the exceptions being 2011 and 2014 when it occurred the week of October 18th (Figure 6). In fall 2014 this could have been the result of the early onset of winter that pushed birds southward earlier than in previous years.

Table 1. Summary statistics for the grouse and woodcock hunting seasons from the Cooperator Ruffed Grouse & American Woodcock Hunting Log, 2014-15.

Summary Statistics	Grouse Hunting					Woodcock Hunting				
	2011-12	2012-13	2013-14	2014-15	3-Year Avg. (11-12 - 13-14)	Fall 2011	Fall 2012	Fall 2013	Fall 2014	3-Year Avg. (2011-13)
Number of Hunters	294	280	260	271	278	266	237	235	252	247.5
Trips/Hunter	10.8	9.4	9.1	9.2	9.8	6.2	6.4	7.6	7.4	6.9
Hours/Trip	2.7	2.6	2.7	2.8	2.7	2.9	2.7	2.8	2.8	2.8
Hours/Hunter	29.4	24.9	24.5	25.4	26.3	17.6	17.1	21.0	21.0	19.2
Birds Flushed/Hunter	26.4	17.8	19.0	18.1	21.1	8.5	10.7	13.1	10.1	10.6
Birds Harvested/Hunter	2.0	1.5	1.5	1.5	1.7	1.9	2.3	2.6	2.0	2.2
Hours/Bird Flushed*	1.1	1.4	1.3	1.4	1.3	2.1	1.6	1.6	2.1	1.8
Hours/Bird Harvested*	14.4	16.5	16.8	17.2	15.9	9.3	7.5	8.1	10.7	8.9
% of Birds Flushed that were Harvested	8.9	8.5	7.7	8.1	8.4	22.2	21.5	19.7	19.5	20.7
Flush Rate (birds flushed/hour)**	0.96	0.73	0.77	0.70	0.82	0.49	0.58	0.70	0.53	0.59

* Number of hours afield to flush or harvest one bird.

** Overall flush rates are calculated as an average flush rate for all days hunted, not a simple division of the total number of birds flushed by the total number of hours hunted.

NOTE: Analyses for woodcock data were restricted to 20 September through 30 November. This represents the period in which resident and migrating woodcock were in New York and accounted for 99% of all the woodcock observations during the survey. Results for 2014 are based on 1,873 trips and 5,282 hours afield by 252 hunters.

Table 2. Hunting effort, grouse flushed and killed, and flush rates (grouse flushed/hour) by month from the Cooperator Ruffed Grouse & American Woodcock Hunting Log, 2014-15.

Month	# of Trips	% of Total	# of Hours	% of Total	# Grouse Flushed	% of Total	# Grouse Harvested	% of Total	Flush Rate \pm SE* (flushes/hour)
September	115	5%	302	4%	291	6%	24	6%	0.88 \pm 0.11
October	1,217	49%	3,355	49%	2,443	50%	183	46%	0.68 \pm 0.03
November	540	22%	1,625	24%	1,054	22%	90	23%	0.70 \pm 0.04
December	251	10%	672	10%	483	10%	46	12%	0.77 \pm 0.06
January	272	11%	707	10%	517	11%	47	12%	0.75 \pm 0.06
February	96	4%	214	3%	113	2%	9	2%	0.55 \pm 0.08

* SE = standard error; Data analysis included logs with some missing data. Overall flush rates are calculated as an average flush rate for all days hunted, not a simple division of the total number of birds flushed by the total number of hours hunted.

Table 3. Hunting effort, grouse and woodcock flushed and killed, and flush rates (birds flushed/hour) by land type (public vs. private) from the Cooperator Ruffed Grouse & American Woodcock Hunting Log, 2014-15.

	Public Land				Private Land			
	Grouse Hunting		Woodcock Hunting		Grouse Hunting		Woodcock Hunting	
	#	%	#	%	#	%	#	%
Number of Trips	1,300	53%	1,024	56%	1,140	47%	809	44%
Number of Hours	3,854	57%	3,089	60%	2,886	43%	2,088	40%
# Birds Flushed	2,961	61%	1,378	55%	1,862	39%	1,109	45%
# Birds Harvested	197	50%	276	57%	194	50%	209	43%
Flush Rate \pm SE* (flushes/hour)	0.73 \pm 0.03		0.47 \pm 0.03		0.68 \pm 0.03		0.61 \pm 0.04	

Table 4. Hunting effort, grouse and woodcock flushed and killed, and flush rates (birds flushed/hour) by season zone from the Cooperator Ruffed Grouse & American Woodcock Hunting Log, 2014-15.

	Northern Zone				Southern Zone			
	Grouse Hunting		Woodcock Hunting		Grouse Hunting		Woodcock Hunting	
	#	%	#	%	#	%	#	%
Number of Trips	659	26%	560	30%	1,832	74%	1,312	70%
Number of Hours	1,903	28%	1,648	31%	4,972	72%	3,634	69%
# Birds Flushed	1,532	31%	808	32%	3,369	69%	1,727	68%
# Birds Harvested	155	39%	126	25%	244	61%	369	75%
Flush Rate \pm SE* (flushes/hour)	0.80 \pm 0.04		0.52 \pm 0.04		0.67 \pm 0.02		0.53 \pm 0.03	

* SE = standard error; Data analysis included logs with some missing data. Overall flush rates are calculated as an average flush rate for all days hunted, not a simple division of the total number of birds flushed by the total number of hours hunted.

NOTE: Analyses for woodcock data were restricted to 20 September through 30 November. This represents the period in which resident and migrating woodcock were in New York and accounted for 99% of all the woodcock observations during the survey. Results for 2014 are based on 1,873 trips and 5,282 hours afield by 252 hunters.

Table 5. Number of hours hunted, number of grouse flushed and killed, and flush rates (grouse flushed/hour) from the Cooperator Ruffed Grouse & American Woodcock Hunting Log, 2014-15.

Ecozone / WMU Aggregate*	Trips		Hours		Grouse Flushed		Grouse Killed		Flush Rate** (grouse flushed/hour)	
	#	%	#	%	#	%	#	%	Mean	SE**
St. Lawrence Valley	132	5.4%	343	5.1%	264	5.5%	24	6.1%	0.83	0.11
East Ontario Plain	58	2.4%	128	1.9%	90	1.9%	4	1.0%	0.90	0.20
St. Lawrence Valley	74	3.0%	215	3.2%	174	3.6%	20	5.1%	0.77	0.11
Champlain Valley	66	2.7%	151	2.2%	67	1.4%	14	3.5%	0.43	0.07
Champlain Valley & Transition	66	2.7%	151	2.2%	67	1.4%	14	3.5%	0.43	0.07
Adirondacks-Tug Hill	444	18.2%	1,378	20.4%	1,192	24.6%	117	29.5%	0.86	0.05
Tug Hill	110	4.5%	367	5.4%	413	8.5%	38	9.6%	1.14	0.10
Tug Hill Transition	128	5.3%	334	4.9%	168	3.5%	11	2.8%	0.55	0.09
Northern Adirondacks	116	4.8%	380	5.6%	364	7.5%	48	12.1%	1.00	0.12
Central Adirondacks	90	3.7%	297	4.4%	247	5.1%	20	5.1%	0.80	0.10
Lake Plains	195	8.0%	454	6.7%	141	2.9%	7	1.8%	0.35	0.05
Oneida Lake Plains	114	4.7%	266	3.9%	112	2.3%	6	1.5%	0.51	0.07
Great Lakes Plain	72	3.0%	173	2.6%	25	0.5%	1	0.3%	0.12	0.05
Oswego Lowlands	9	0.4%	15	0.2%	4	0.1%	0	0.0%	n/a***	
Appalachian Hills & Plateau	832	34.2%	2,187	32.4%	1,549	32.0%	115	29.0%	0.73	0.04
East Appalachian Plateau	420	17.2%	1,092	16.2%	958	19.8%	82	20.7%	0.83	0.05
Central Appalachian Plateau	50	2.1%	162	2.4%	131	2.7%	3	0.8%	0.97	0.23
North Appalachian Hills	128	5.3%	324	4.8%	141	2.9%	8	2.0%	0.53	0.07
West Appalachian Hills	234	9.6%	609	9.0%	319	6.6%	22	5.6%	0.63	0.06
Catskills-Delaware Hills	440	18.1%	1,334	19.8%	1,369	28.3%	93	23.5%	0.98	0.05
Catskills	235	9.6%	793	11.7%	774	16.0%	54	13.6%	0.98	0.06
Otsego-Delaware Hills	157	6.4%	452	6.7%	567	11.7%	35	8.8%	1.18	0.08
Neversink-Mongaup Hills	48	2.0%	89	1.3%	28	0.6%	4	1.0%	0.32	0.07
Mohawk Valley-Hudson Valley-Taonic Highlands	327	13.4%	904	13.4%	255	5.3%	26	6.6%	0.31	0.04
Mohawk Valley	71	2.9%	206	3.1%	127	2.6%	5	1.3%	0.61	0.12
Hudson Valley	142	5.8%	401	5.9%	28	0.6%	4	1.0%	0.06	0.02
North Taonic Highlands	78	3.2%	195	2.9%	79	1.6%	12	3.0%	0.51	0.09
South Taonic Highlands	35	1.4%	99	1.5%	21	0.4%	5	1.3%	0.26	0.08
New York City Transition	1	0.0%	3	0.0%	0	0.0%	0	0.0%	n/a***	
Statewide Totals	2,436		6,751		4,837		396		0.77	0.02

*WMU Aggregates are groupings of Wildlife Management Units. Ecozones are groupings of WMU Aggregates. The Coastal Lowlands Aggregate (New York City and Long Island) does not have a ruffed grouse season, thus is not listed.

** Overall flush rates are calculated as an average flush rate for all days hunted, not a simple division of the total number of grouse flushed by the total number of hours hunted; Data analysis included logs with some missing data. SE = Standard Error

***There was an insufficient sample size in these WMU aggregates. A minimum of 20 trips or 35 hours is needed for analysis. Data from these aggregates contributed to the ecozone and statewide totals.

Table 6. Hunting effort, grouse and woodcock flushed and killed, and flush rates (birds flushed/hour) by hunting method (with dog vs. without) from the Cooperator Ruffed Grouse & American Woodcock Hunting Log, 2014-15.

	Hunted <i>WITH</i> a Dog				Hunted <i>WITHOUT</i> a Dog			
	Grouse Hunting		Woodcock Hunting		Grouse Hunting		Woodcock Hunting	
	#	%	#	%	#	%	#	%
Number of Trips	1,491	61%	1,201	65%	944	39%	638	35%
Number of Hours	3,885	58%	3,193	61%	2,849	42%	2,006	39%
# Birds Flushed	3,116	65%	2,243	90%	1,692	35%	247	10%
# Birds Harvested	263	67%	445	91%	127	33%	42	9%
Flush Rate \pm SE (flushes/hour)	0.78 \pm 0.03		0.73 \pm 0.03		0.59 \pm 0.03		0.14 \pm 0.02	

* SE = standard error; Data analysis included logs with some missing data. Overall flush rates are calculated as an average flush rate for all days hunted, not a simple division of the total number of birds flushed by the total number of hours hunted.

NOTE: Analyses for woodcock data were restricted to 20 September through 30 November. This represents the period in which resident and migrating woodcock were in New York and accounted for 99% of all the woodcock observations during the survey. Results for 2014 are based on 1,873 trips and 5,282 hours afield by 252 hunters.

Table 7. Hunting effort, woodcock flushed and killed, and flush rates (woodcock flushed/hour) by week from the Cooperator Ruffed Grouse & American Woodcock Hunting Log, 2014-15.

Week of	# of Trips	% of Total	# of Hours	% of Total	# Woodcock Flushed	% of Total	# Woodcock Harvested	% of Total	Flush Rate \pm SE* (flushes/hour)
20 September	85	5%	222	4%	110	4%	0	0%	0.50 \pm 0.10
27 September	199	11%	517	10%	265	10%	39	8%	0.55 \pm 0.08
4 October	295	17%	784	16%	408	17%	84	17%	0.58 \pm 0.06
11 October	251	13%	677	13%	351	14%	80	16%	0.56 \pm 0.07
18 October	232	12%	683	13%	527	21%	102	21%	0.83 \pm 0.07
25 October	269	14%	769	15%	468	18%	105	21%	0.65 \pm 0.06
1 November	219	12%	633	12%	233	9%	50	10%	0.41 \pm 0.05
8 November	206	11%	623	12%	164	6%	34	7%	0.30 \pm 0.05
15 November	51	3%	177	3%	5	0%	0	0%	0.06 \pm 0.03
22 November	45	2%	124	2%	2	0%	0	0%	0.01 \pm 0.01
30 November	19	1%	68	1%	0	0%	0	0%	0.00 \pm 0.00

* Overall flush rates are calculated as an average flush rate for all days hunted, not a simple division of the total number of woodcock flushed by the total number of hours hunted; Data analysis included logs with some missing data; SE = Standard Error

NOTE: Analyses for woodcock data were restricted to 20 September through 30 November. This represents the period in which resident and migrating woodcock were in New York and accounted for 99% of all the woodcock observations during the survey. Results for 2014 are based on 1,873 trips and 5,282 hours afield by 252 hunters.

Table 8. Number of hours hunted, number of woodcock flushed and killed, and flush rates (woodcock flushed/hour) from the Cooperator Ruffed Grouse & American Woodcock Hunting Log, 2014-15.

Ecozone / WMU Aggregate*	Trips		Hours		Woodcock Flushed		Woodcock Killed		Flush Rate** (woodcock flushed/hour)	
	#	%	#	%	#	%	#	%	Mean	SE**
St. Lawrence Valley	109	6.0%	285	5.5%	187	7.6%	40	8.4%	0.60	0.10
East Ontario Plain	47	2.6%	100	1.9%	37	1.5%	8	1.7%	0.50	0.17
St. Lawrence Valley	62	3.4%	185	3.6%	150	6.1%	32	6.7%	0.68	0.13
Champlain Valley	42	2.3%	98	1.9%	30	1.2%	3	0.6%	0.27	0.09
Champlain Valley & Transition	42	2.3%	98	1.9%	30	1.2%	3	0.6%	0.27	0.09
Adirondacks-Tug Hill	396	21.7%	1,240	24.0%	589	24.1%	82	17.1%	0.53	0.05
Tug Hill	103	5.7%	346	6.7%	131	5.4%	16	3.3%	0.41	0.06
Tug Hill Transition	119	6.5%	311	6.0%	86	3.5%	10	2.1%	0.32	0.11
Northern Adirondacks	92	5.0%	312	6.0%	172	7.0%	35	7.3%	0.62	0.11
Central Adirondacks	82	4.5%	271	5.2%	200	8.2%	21	4.4%	0.90	0.14
Lake Plains	148	8.1%	347	6.7%	238	9.7%	60	12.5%	0.86	0.11
Oneida Lake Plains	89	4.9%	221	4.3%	131	5.4%	28	5.8%	0.57	0.12
Great Lakes Plain	53	2.9%	116	2.2%	107	4.4%	32	6.7%	1.43	0.22
Oswego Lowlands	6	0.3%	10	0.2%	0	0.0%	0	0.0%	n/a***	
Appalachian Hills & Plateau	591	32.4%	1,591	30.8%	685	28.0%	157	32.8%	0.50	0.04
East Appalachian Plateau	341	18.7%	909	17.6%	438	17.9%	106	22.1%	0.56	0.06
Central Appalachian Plateau	23	1.3%	101	2.0%	7	0.3%	0	0.0%	0.12	0.05
North Appalachian Hills	71	3.9%	184	3.6%	93	3.8%	23	4.8%	0.44	0.11
West Appalachian Hills	156	8.6%	397	7.7%	147	6.0%	28	5.8%	0.44	0.07
Catskills-Delaware Hills	332	18.2%	1,023	19.8%	528	21.6%	77	16.1%	0.50	0.05
Catskills	172	9.4%	601	11.6%	208	8.5%	44	9.2%	0.39	0.05
Otsego-Delaware Hills	127	7.0%	368	7.1%	316	12.9%	32	6.7%	0.74	0.11
Neversink-Mongaup Hills	33	1.8%	54	1.0%	4	0.2%	1	0.2%	0.12	0.06
Mohawk Valley-Hudson Valley-Taconic Highlands	205	11.2%	587	11.4%	189	7.7%	60	12.5%	0.36	0.05
Mohawk Valley	33	1.8%	93	1.8%	8	0.3%	3	0.6%	0.11	0.04
Hudson Valley	108	5.9%	307	5.9%	78	3.2%	19	4.0%	0.25	0.05
North Taconic Highlands	43	2.4%	123	2.4%	79	3.2%	32	6.7%	0.80	0.14
South Taconic Highlands	21	1.2%	64	1.2%	24	1.0%	6	1.3%	0.40	0.17
New York City Transition	0	0.0%	0	0.0%	0	0.0%	0	0.0%	n/a***	
Statewide Totals	1,823		5,171		2,446		479		0.53	0.02

*WMU Aggregates are groupings of Wildlife Management Units. Ecozones are groupings of WMU Aggregates. The Coastal Lowlands Aggregate (New York City and Long Island) does not have a ruffed grouse season, thus is not listed.

** Overall flush rates are calculated as an average flush rate for all days hunted, not a simple division of the total number of woodcock flushed by the total number of hours hunted; Data analysis included logs with some missing data. SE = Standard Error

***There was an insufficient sample size in these WMU Aggregates. A minimum of 20 trips or 35 hours is needed for analysis. Data from this aggregate contributed to the ecozone and statewide totals.

NOTE: Analyses for woodcock data were restricted to 20 September through 30 November. This represents the period in which resident and migrating woodcock were in New York and accounted for 99% of all the woodcock observations during the survey. Results for 2014 are based on 1,873 trips and 5,282 hours afield by 252 hunters.

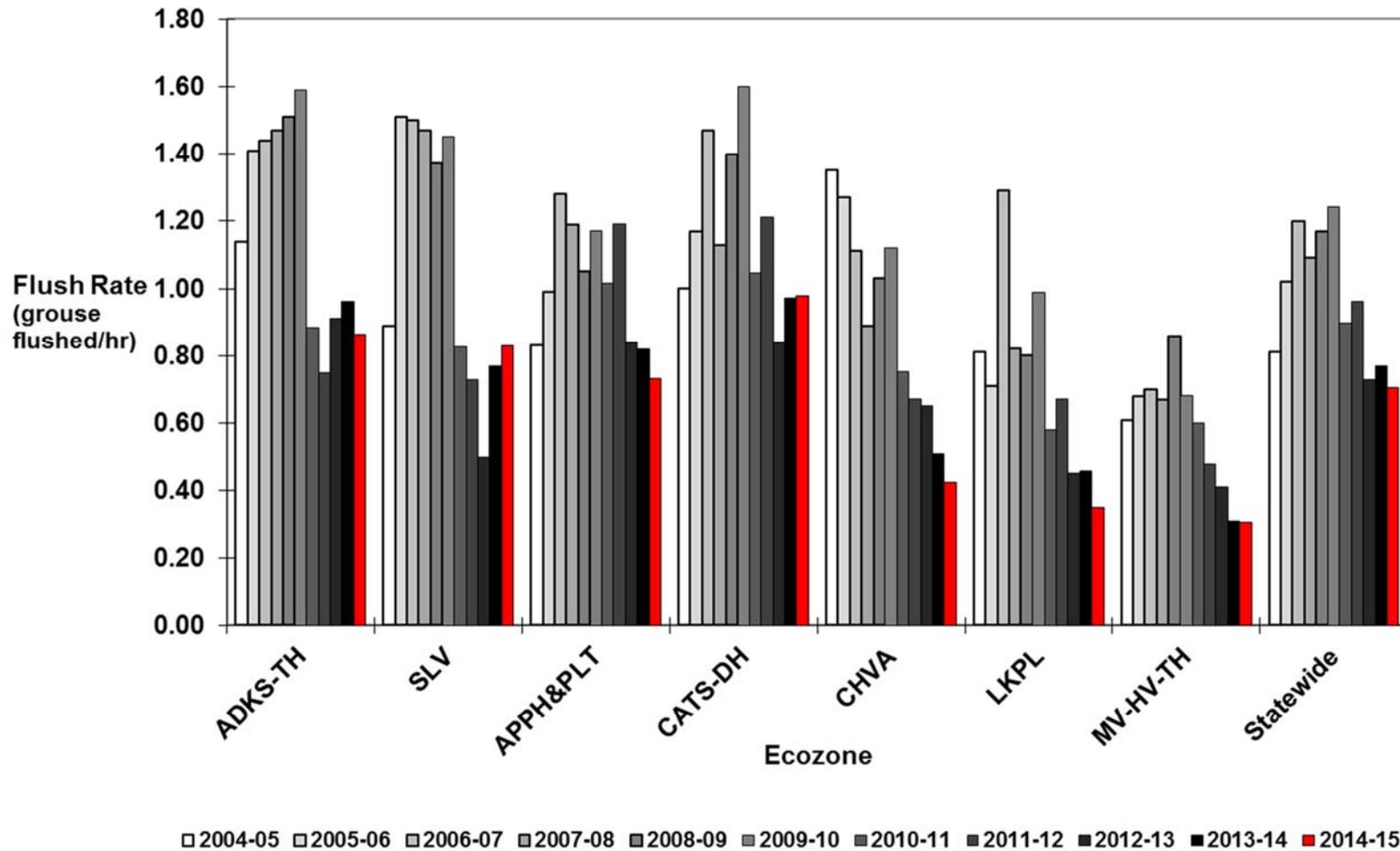


Figure 1. Flush rate (grouse flushed/hour) by ecozone based on Cooperator Ruffed Grouse Hunting Log data for the 2004-05 through 2014-15 seasons. Ecozones are an aggregation of Wildlife Management Units. Abbreviations: Champlain Valley (CHVA), Adirondacks-Tug Hill (ADKS-TH), Catskills-Delaware Hills (CATS-DH), St. Lawrence Valley (SLV), Appalachian Hills & Plateau (APPH&PLT), Lake Plains (LKPL), Mohawk Valley-Hudson Valley-Taconic Highlands (MV-HV-TH). The Coastal Lowlands Ecozone (New York City and Long Island) does not have a ruffed grouse hunting season.

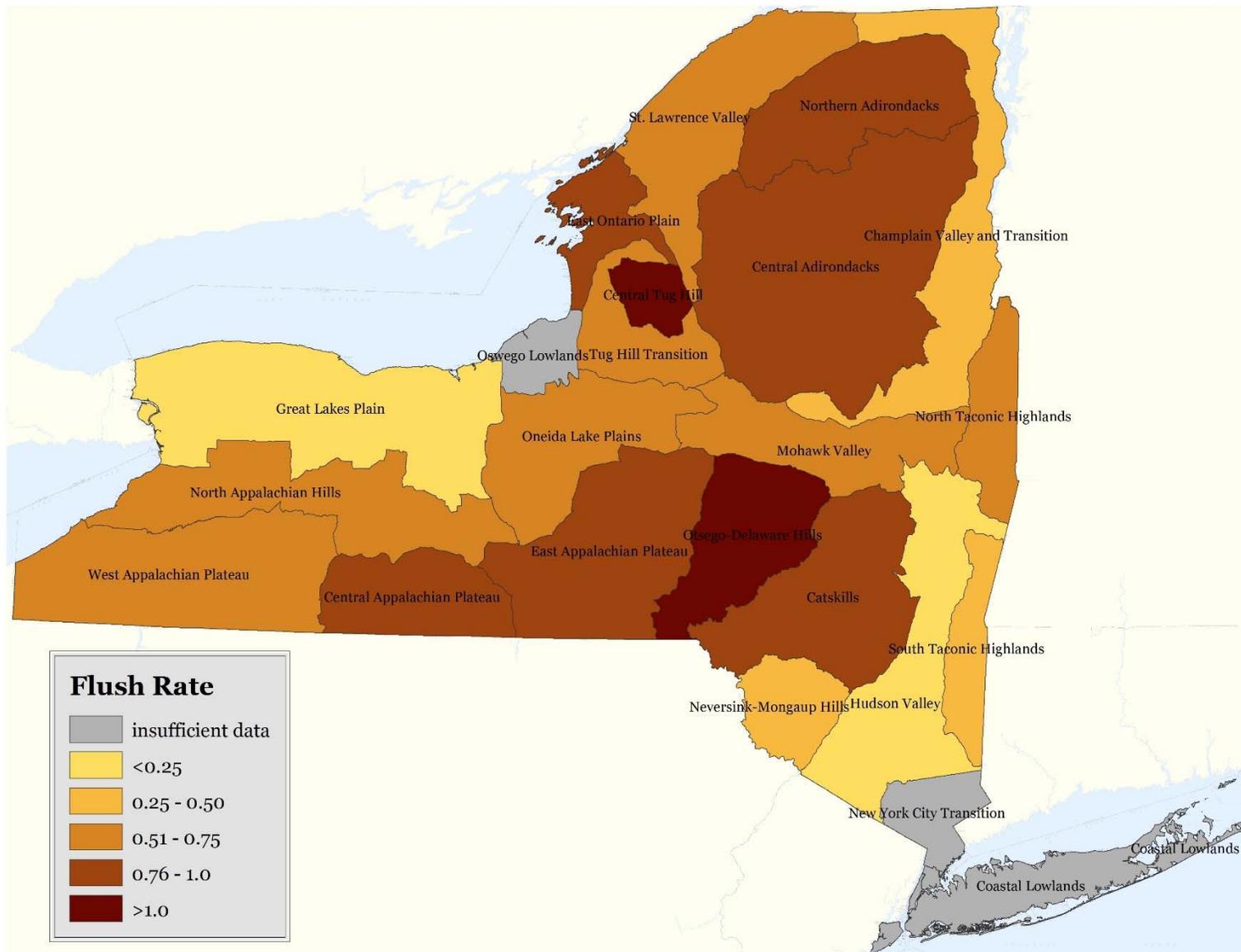


Figure 2. Ruffed Grouse flush rate (grouse flushed/hour) by Wildlife Management Unit (WMU) aggregate from the Cooperator Ruffed Grouse & American Woodcock Hunting Log, 2014-15. Only aggregates with ≥ 20 observations/records and ≥ 35 hours were included in the analysis. The statewide flush rate for 2014-15 was 0.70 grouse flushed/hour. WMU aggregate in gray north of New York City had too few observations for analysis. The Coastal Lowlands aggregate does not have a grouse hunting season, so the survey was not conducted there.

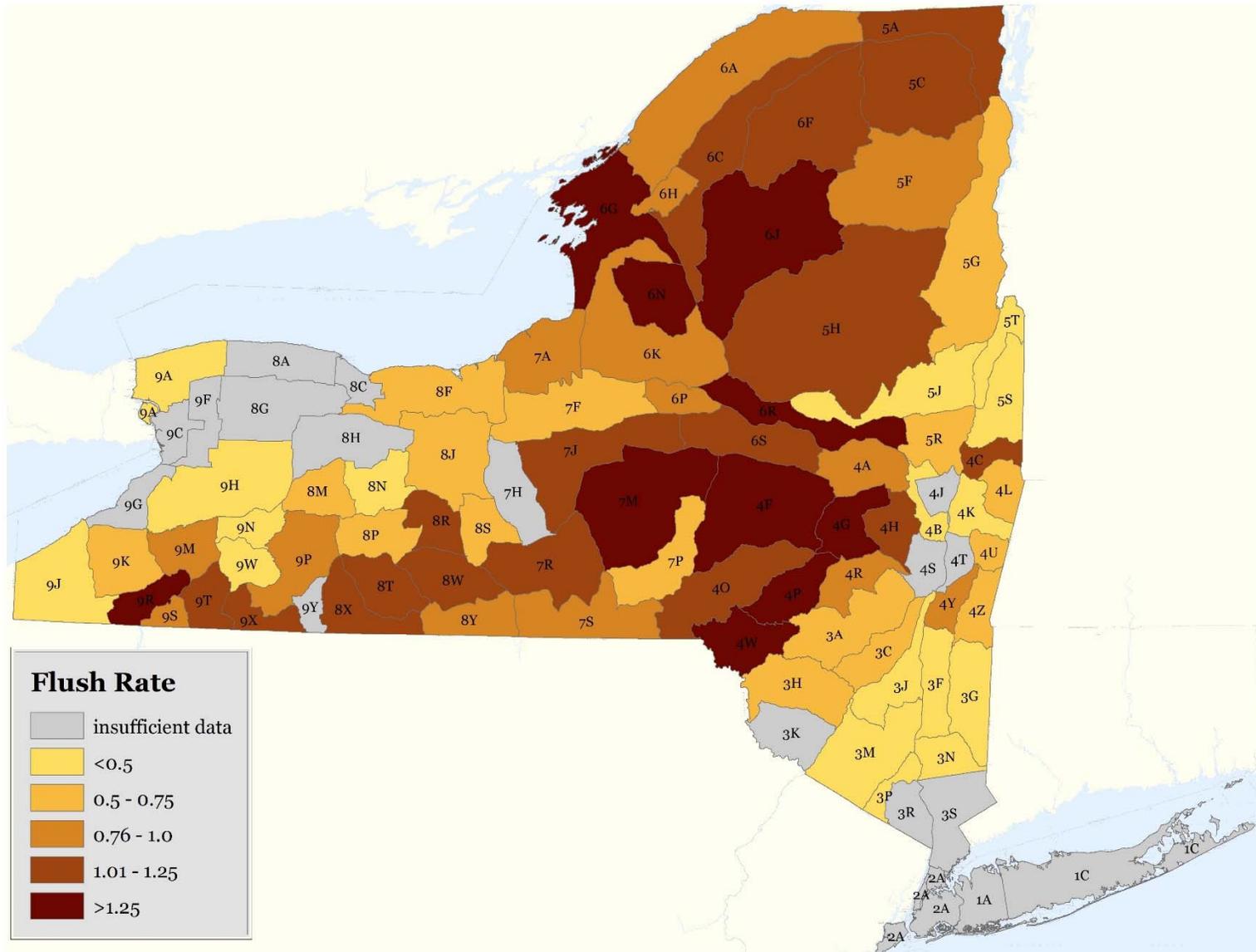


Figure 3. Ruffed Grouse flush rate (grouse flushed/hour) by Wildlife Management Unit (WMU) from the Cooperator Ruffed Grouse & American Woodcock Hunting Log, 2004-05 – 2014-15. Only WMUs with ≥ 50 observations/records and ≥ 150 hours were included in the analysis. The statewide flush rate for the eleven-year period was 1.0 grouse flushed/hour. WMUs in gray north of New York City (WMU 2A) had too few observations for analysis. WMUs comprising the Coastal Lowlands aggregate (WMUs 2A, 1A, and 1C) do not have a grouse hunting season.

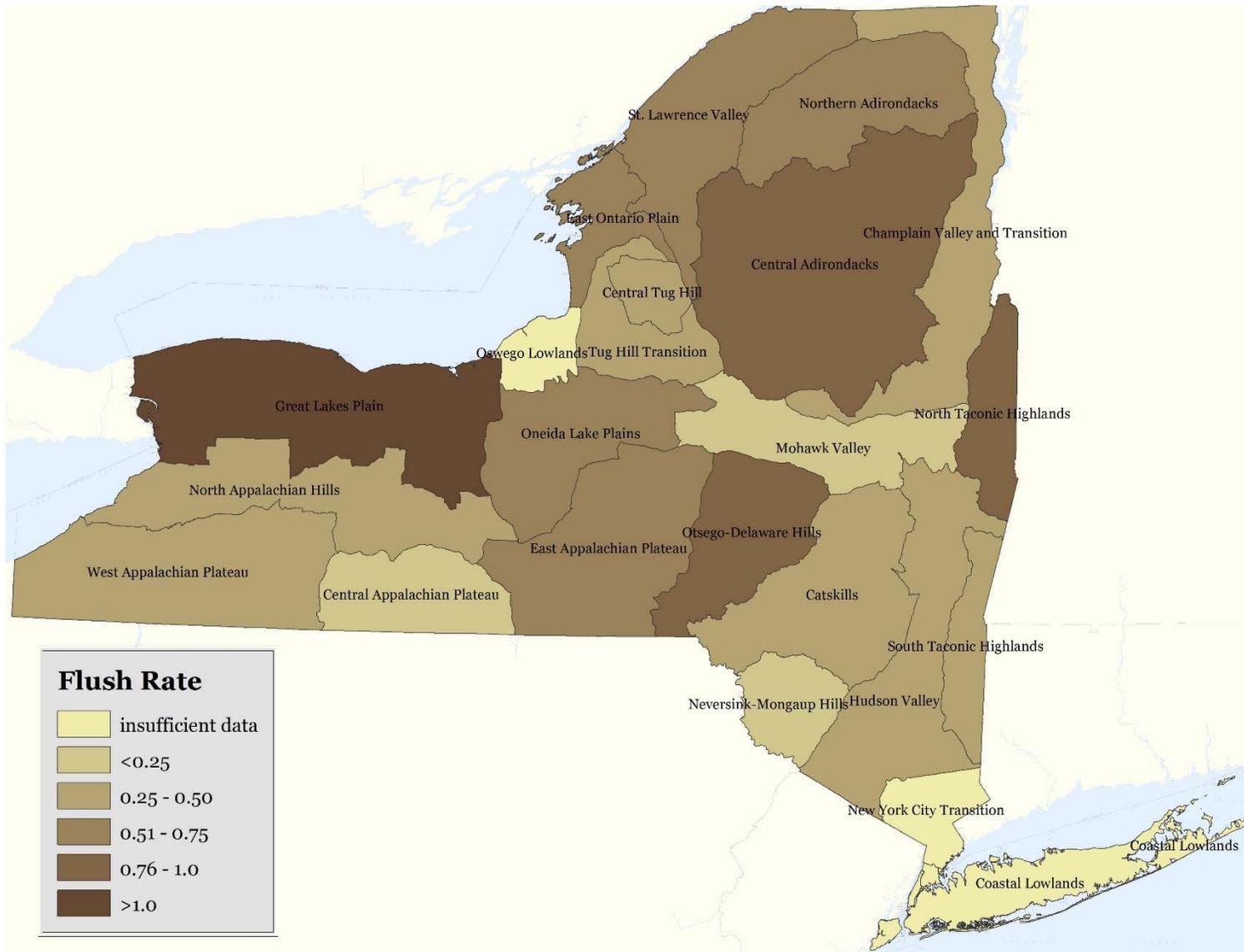


Figure 4. American woodcock flush rate (birds flushed/hour) by Wildlife Management Unit (WMU) aggregate from the Cooperator Ruffed Grouse & American Woodcock Hunting Log, 2014-15. Only aggregates with ≥ 20 observations/records and ≥ 35 hours were included in the analysis. The statewide flush rate for 2014 was 0.53 woodcock flushed/hour. The Coastal Lowlands aggregate does not have a grouse hunting season, so the survey was not conducted there.

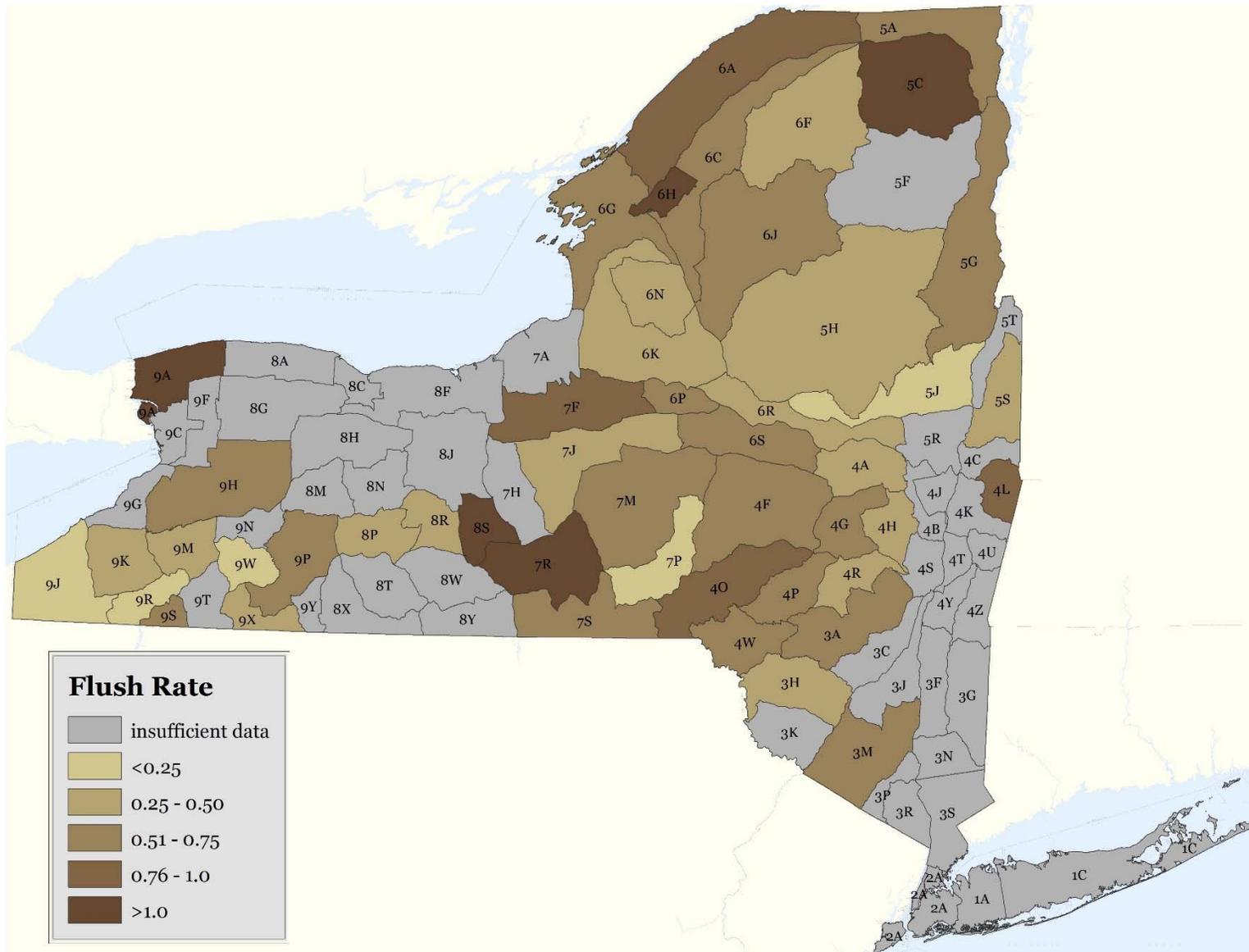


Figure 5. American woodcock flush rate (birds flushed/hour) by Wildlife Management Unit (WMU) from the Cooperator Ruffed Grouse & American Woodcock Hunting Log, 2010-11 – 2014-15. Only WMUs with ≥ 50 observations/records and ≥ 150 hours were included in the analysis. The statewide flush rate for 2010-14 was 0.57 woodcock flushed/hour. WMUs in gray north of New York City (WMU 2A) had too few observations for analysis. WMUs comprising the Coastal Lowlands aggregate (WMUs 2A, 1A, and 1C) do not have a grouse hunting season, so the survey was not conducted there.

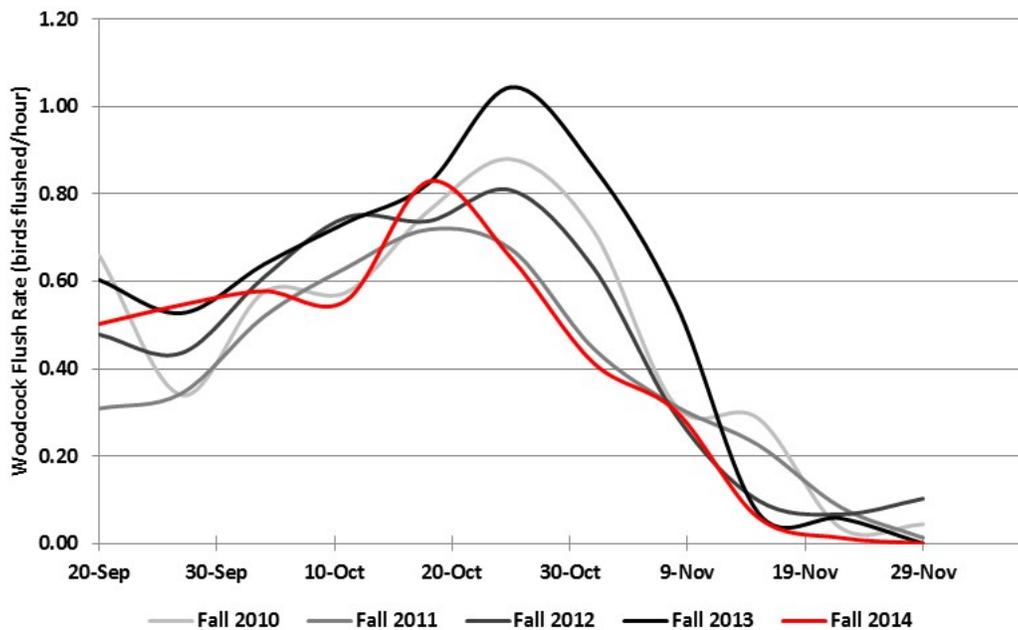
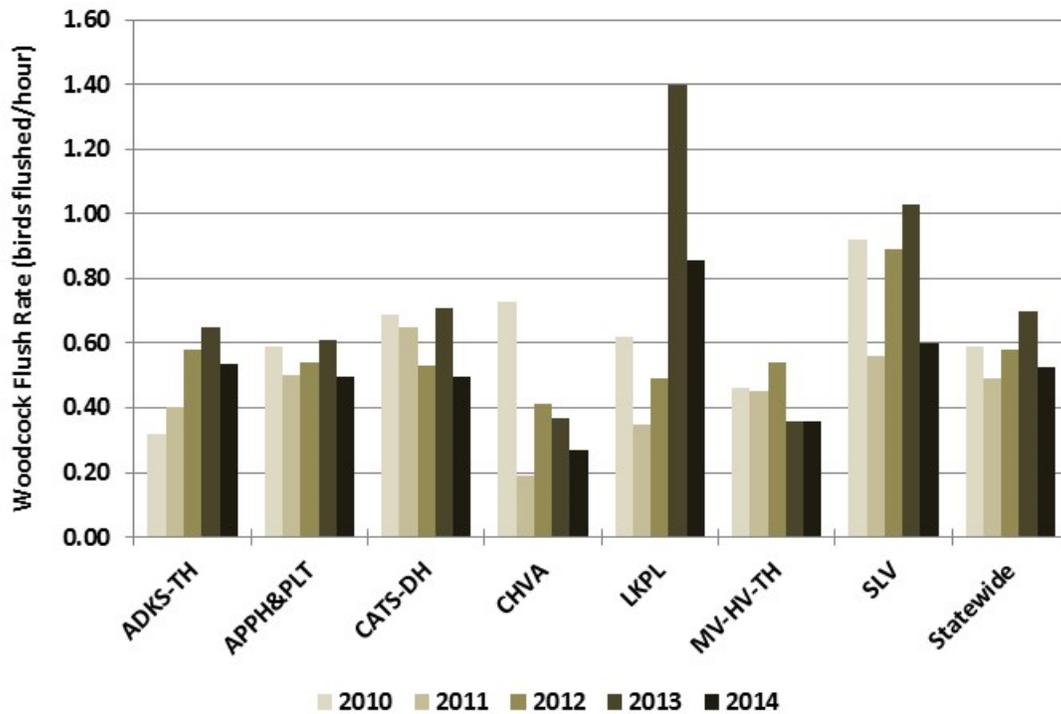


Figure 6. American woodcock flush rate (woodcock flushed/hour) by ecozone (top) and the flush rate by week (bottom) from the Cooperator Ruffed Grouse & Woodcock Hunting Log. The statewide flush rate for 2014 was 0.53 woodcock flushed/hour. Abbreviations: Champlain Valley (CHVA), Adirondacks-Tug Hill (ADKS-TH), Catskills-Delaware Hills (CATS-DH), St. Lawrence Valley (SLV), Appalachian Hills & Plateau (APPH&PLT), Lake Plains (LKPL), Mohawk Valley-Hudson Valley-Taconic Highlands (MV-HV-TH). The Coastal Lowlands Ecozone (New York City and Long Island) does not have a ruffed grouse hunting season.



The work described in this report was supported by Federal Aid in Wildlife Restoration Grant W-173-G.