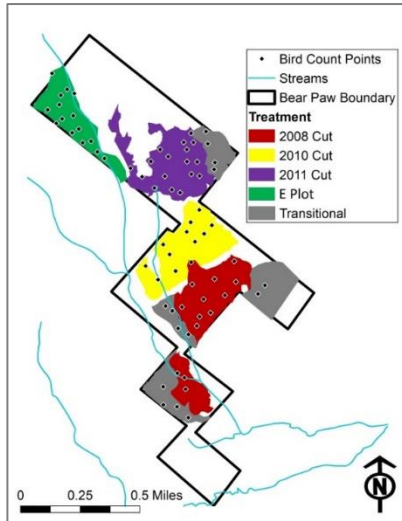




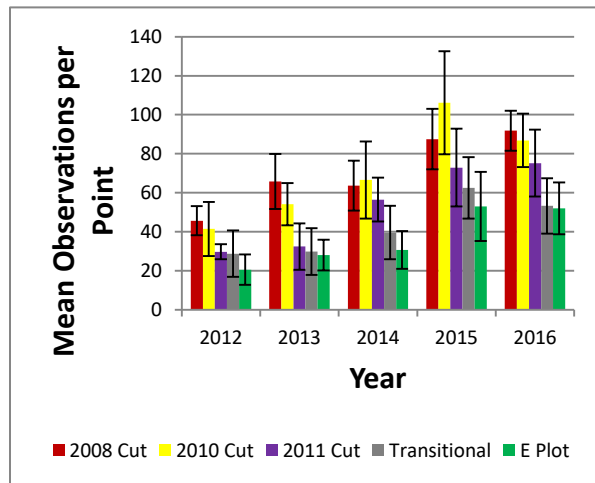
Bird Communities on the Bear Paw Timberlands

Kiah Walker, Tin Mountain Conservation Center



Tin Mountain Conservation Center (TMCC) manages the Bear Paw Timberlands in Conway, New Hampshire with single-tree selection. Single-tree selection is a relatively low-disturbance method of harvesting individual trees, creating gaps in between mature trees and allowing younger trees to grow. TMCC conducted three separate but adjacent harvests in 2008, 2010, and 2011, leaving some nearby (“transitional”) areas uncut. A non-adjacent uncut plot (“E Plot”) has a different forest composition than the rest of Bear Paw, with more conifers and less understory. It therefore serves as a comparison but not a control plot.

Since 2012, TMCC has monitored both the cut and uncut areas through weekly breeding season point counts and annual vegetation surveys. TMCC uses point counts (surveys of birds at established points) to assess changes in bird populations and relationships between birds and vegetation in the Bear Paw Timberlands. Unfortunately, without pre-harvest surveys, we cannot determine whether cuts had greater bird abundance and diversity than other portions of Bear Paw prior to the harvests.



Variation between Years: The number of birds per point increased significantly over time in all treatments, typically peaking in 2015. However, most Bear Paw observers differed between years, confounding the effects of years and observers.

Twelve species were observed at least 50 times in each year. Of the twelve, only the eastern wood-pewee did not increase or decrease in any treatment type, and only the hermit thrush (a species that usually inhabits mature,

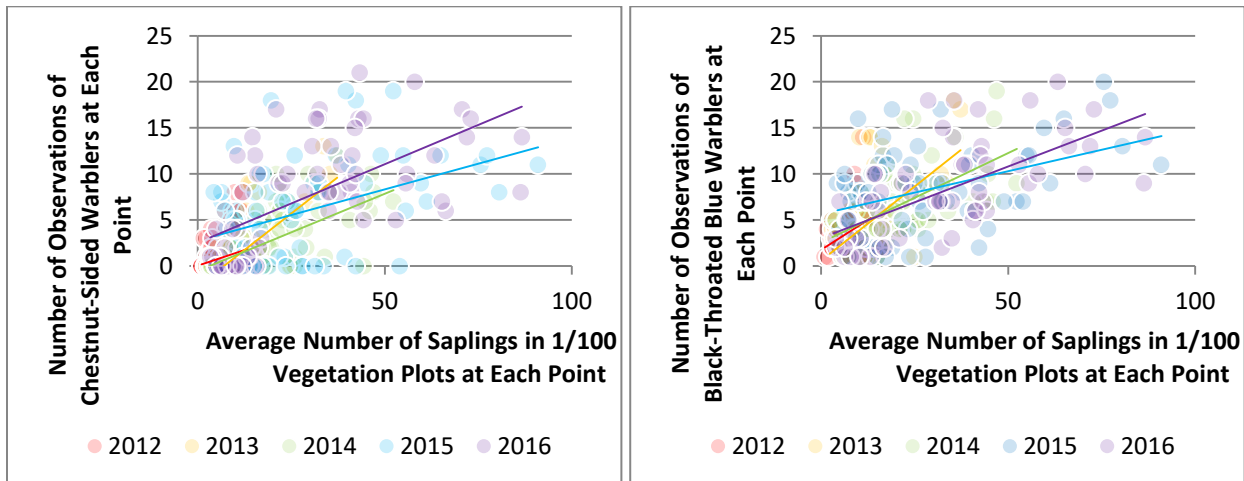
undisturbed forests) showed any significant declines. All other species increased significantly in at least one treatment, but only chestnut-sided warblers increased in all treatment types.

Variation between Treatments: We can more reliably assess differences in bird abundance and diversity between treatment types within the same year. Within each year, more birds were observed in the cut areas than in the uncut areas. In all years, black-throated blue warblers were observed more frequently in the 2008 cut than in any other treatment, chestnut-sided

warblers were more common in the 2008 cut than in transitional areas or E Plot, and yellow-bellied sapsuckers were more common in the 2008 cut than in E Plot. One additional species did not meet the fifty-observation-per-year threshold, but it is still noteworthy: the least flycatcher. In all years, least flycatchers were detected more frequently in the 2010 cut than the 2011 cut, transitional areas, or E Plot.

Vegetation Characteristics: The different harvest treatments had predictable differences in vegetation characteristics. Most notably, the number of saplings generally increased in the cuts while remaining low in the transitional areas and E Plot.

Relationships between Birds and Vegetation Characteristics: Two significant relationships between bird detections and vegetation characteristics occurred across all years. Black-throated green warblers (which are known to prefer coniferous habitat) always had a slight positive correlation with the percent of conifers, and chestnut-sided warblers (which are typically associated with early successional or shrubland habitat) always had a strong positive correlation with the number of saplings. Four other trends were significant in four of five years of the study: black-throated blue warblers, red-eyed vireos, and yellow-bellied sapsuckers had positive correlations with the number of saplings, and red-eyed vireos had a negative correlation with basal area. Sapling and understory growth (which results directly from harvest activities) likely provides nesting and foraging habitat for these and other species.



Left: Positive correlation between chestnut-side warblers and number of saplings. Right: Positive correlation between black-throated blue warblers and number of saplings.

Based on these five years of post-harvest data, the Bear Paw cuts appear to provide greater habitat diversity than transitional areas and E Plot, particularly in the understory, thereby supporting a greater diversity of bird species and foraging guilds. Repeated cuts and development of uneven-aged stands may help to maintain populations of both early and late successional bird species like those that Bear Paw currently supports.