

There are no fall hawk watch sites along the lake shoreline in central New York. The nearest fall site, Kestrel Haven located in south central New York, was generally lower than the St. Lawrence Windpower project area in terms of raptors counted per surveyor hour; however, count data for this site is only available for 2005 so a direct comparison of actual survey days could not be made. Fall hawk watch sites further south and east, such as Franklin Mountain, record similar numbers of migrant raptors, which are likely taking advantage of ridgelines of the western Appalachian Mountains; however timing is different among the sites. Higher numbers of raptors per surveyor hour were seen earlier in the fall season at the St. Lawrence Windpower project area than at more southern sites. This may be a reflection of the more northern latitude of the study area or summer residents, such as red-tailed hawk, turkey vulture, and northern harrier, still in the area.

Exposure indices are a method for estimating relative risk to individual species from wind turbines based on the observed flight characteristics. During both migratory seasons, non-raptor species had the highest exposure index due to high use of the area by waterfowl and waterbirds, such as Canada goose and gull species (Table 2). At the St. Lawrence Windpower project area, raptors in general did not have high exposure indices due to either low numbers recorded or flight heights outside of the zone of risk. Turkey vulture had the highest exposure index; they were commonly observed and were most often observed flying in the zone of risk. While these species have been recorded as fatalities at other monitored wind plants, the number of fatalities are relatively small (see Erickson et al. 2001, 2002). Cooper's hawk and osprey were seen less frequently, but were seen primarily flying in the zone of risk. In contrast, northern harrier were often recorded, particularly during fall migration, but rarely (20.49%) observed flying into the zone of risk and has rarely been recorded as fatalities at other monitored wind facilities (see Erickson et al. 2001, 2002).

### **4.3 Breeding Bird Survey**

The results of the breeding bird surveys were typical of agricultural settings in central New York. Frequently recorded species included European starling, bobolink, and red-winged blackbird. A few woodland species, such as wood thrush and ovenbird, were observed in small wooded areas and wetlands scattered throughout the project area. Several species of gulls and waterfowl are also present in the area due to proximity to the shoreline. The closest breeding bird survey (Watertown; Sauer et al. 2005) reported similar species occurrences and abundances. Four species listed by the NYSDEC were observed within the St. Lawrence Windpower project area: northern harrier, horned lark, grasshopper sparrow, and vesper sparrow. Northern harrier is listed as NY State threatened. The remaining three species are listed as Special Concern species for New York (NYSDEC 2003). Bobolink, a commonly occurring species within the project area (Table 3) and wood thrush are included on the 2002 Birds of Conservation Concern list for Lower Great Lakes/St. Lawrence Plain region (USFWS 2002) in which the project area occurs. Henslow's sparrow, a NY state threatened species, has been recorded during breeding bird surveys in the region (Sauer et al. 2005); however, this species was not seen during counts within the St. Lawrence Windpower project area though habitat for this species exists.

Based on the breeding bird survey data collected in 2006, the St. Lawrence Windpower project area does not appear to have any large or unusual populations of breeding resident birds. Mortality results from two other eastern wind plants studied indicate that turbines on eastern mountain ridgelines result in between 4 and 8 bird fatalities per turbine per year (see Kerns and Kerlinger 2004 and Nicholson 2002, 2003). In both of these studies it was estimated that approximately two-thirds of the avian fatalities were migrants. Provided impacts at the St. Lawrence Windpower project area are similar, it is not expected that breeding resident birds are at significant risk from the wind project. Due to the diversity of birds recorded in the mixed farmland habitat, impacts are expected to be spread over several commonly observed species.

#### **4.4 Nocturnal AnaBat Surveys**

##### Passage Rates

To date monitoring studies of wind projects have shown a few common trends in bat mortality. Risk to bats from turbines appears to be unequal across species and seasons where increased mortality occurs during the post breeding or fall migration season (roughly mid-July through September) among migrant bats species (see Johnson 2005). Some studies have shown apparent low risk from turbines to resident bat populations (Johnson et al. 2003) while others have shown that mortality is not correlated with AnaBat call rates (Nicholson 2002, 2003). The post-construction mortality data collected at existing regional projects appears to be the best available predictor of mortality levels and species composition for proposed wind projects.

The number of bats detected per night at the project met tower was highest in the spring (19.7 calls/night) and summer (22.0 calls/night). These results contrast with results of mortality studies of bats at wind projects in the U.S., which have shown a peak in mortality in August and September (see Johnson 2005). While the survey efforts varied among the different studies, the studies that included AnaBat surveys and fatality surveys showed a general association between the timing of bat calls and timing of mortality, with both peak call rates and peak mortality occurring during the fall. Lower bat activity was recorded at the project met tower during fall migration (9.26 calls/night) than other times during the year. Bat activity collected at the project met tower suggests that bat activity declined in the fall and thus fewer bats would be exposed to risk of collision at the St. Lawrence Windpower project.

Bat activity captured at non-met locations during migration seasons and summer was higher than that recorded at the met tower. Activity at the non-met sampling locations range from 29–33 calls/night during migration seasons to 56 calls/night during summer breeding season. Consistent differences in bat activity between met and non-met locations is likely due largely to habitat at the sampling locations. Acoustic sampling at the met tower, located in an open pasture and a location recommended by agency personnel, should be more reflective of bat activity in areas where turbines will be constructed. The differences between the met tower station and non-met stations are likely due to the relative abundance of bats occurring in pastures versus more diverse habitat such as edge or woodlots. Ultimately, however, predicted risk to migratory and breeding bats using acoustic monitoring appears to be limited based on previous studies at other wind sites where there have been conflicting results.