

Seven Years Later Kirtland's Warbler at Garrison Petawawa 2006-2013



Tammy Richard

Figure 1: Male Kirtland's Warbler
at Garrison Petawawa.

Photo: Tammy Richard/DND

Introduction

The Kirtland's Warbler (*Setophaga kirtlandii*) is an endangered species that was re-discovered in Ontario in 2006 at Garrison Petawawa (formerly Canadian Forces Base Petawawa) (Richard 2008). Until 2006, the species was only known to breed in Michigan, USA (Walkinshaw 1983, Probst 1991, Mayfield 1992). However, in 2007, surveys led by the Department of National Defence (DND) on Garrison Petawawa detected the first nesting pair in Canada in 62 years (Richard 2008). That same year, Kirtland's Warblers were also discovered nesting in Wisconsin (Trick *et al.* 2008).

There are historical records of Kirtland's Warbler in suitable habitat in Ontario, dating back to 1916 in Petawawa (Table 1). Approximately 18 occurrences of Kirtland's

Table 1: Kirtland's Warbler sightings in potential breeding habitat in Canada from 1900 to 2005
(compiled from multiple sources)*

Location	Year	Date(s) detected	Details	Source
CFB Petawawa, ON	1916	4 June – 12 July	Multiple males singing on property	Harrington 1939
CFB Petawawa, ON	1939	5 June	Male	Harrington 1939
Barrie, ON**	1945	8-31 August	One male, one female and fledgling	Speirs 1984
CFB Petawawa, ON	1946	18 June	One singing male	Hibbard and Aird 1978
CFB Petawawa, ON	1946	27 July	One male	Hibbard and Aird 1978
Bruce Peninsula (Tobermory/McVicar, ON)**	1958	8-30 June	Singing male	Baillie 1958; Hibbard and Aird 1978; Aird and Pope 1987
Hamilton, ON	1960	17 June	Male	Hibbard and Aird 1978
Parry Sound, ON (Point au Baril)**	1961	17 June	Male	Curry 1991
Rice Lake, ON	1963	2 July	Male	Hibbard and Aird 1978
Barrie/Midhurst, ON	1964	16-20 May	Male	Hibbard and Aird 1978; COSEWIC 2008
CFB Petawawa, ON**	1977	9 June – 14 July	One singing male; banded on 1 July; had two territories	Aird 1977; Hibbard and Aird 1978; Aird 1989
CFB Petawawa, ON**	1978	27 May – 21 June	One singing male; banded in Petawawa in 1977	Hibbard and Aird 1978; Aird 1989
Kazabazua, PQ	1978	27 May – 21 June	Male; banded as nestling in Michigan	Hibbard and Aird 1978; Chamberlain and McKeating 1978
Makwa Lake, Sudbury District, ON**	1982	1 June	Male	COSEWIC 2008
Near Orillia, ON	1985	22 June – 9 July	One singing male	Aird and Pope 1987
Minaki, Kenora District, ON**	1988	14 August	One (sex not stated)	COSEWIC 2008
Thessalon area, ON	1997	4 July	Male	COSEWIC 2008
Forest, ON**	1999	9-10 June	Male	COSEWIC 2008

* Migration records in Canada, as listed in Petrucha *et al.* (2013), have been excluded from this table except for one record in May 1964 that was likely in suitable habitat based on supplemental information. Migration records were defined by Petrucha *et al.* (2013) as sightings between 1 March and 31 May and between 1 August and 30 November. Additional information, if available, was screened by the author to assess the migration record (i.e. behavior). In a few cases in Ontario, sightings in August were not listed as a migration sighting in Petrucha *et al.* (2013), and are supported by evidence of suitable habitat and are therefore included in this table.

** Records of Kirtland's Warbler accepted by the Ontario Bird Records Committee (OBRC) (COSEWIC 2008).

Warbler in potential breeding habitat are documented in Canada between 1900 and 2005, however, there are 47 spring migration records of Kirtland's Warbler in Ontario between 1900 and 2005 and 7 fall migration records (Petrucha *et al.* 2013). Kirtland's Warblers leave the Bahamas for their breeding grounds in the United States and Canada at the end of April and fly through Florida, Georgia and South Carolina (Walkinshaw 1983). As they move northward, the migration route widens in a fan-like pattern across several U.S. states (Petrucha *et al.* 2013). Many spring migrants have been detected along the shorelines of the Great Lakes including in Toronto, Point Pelee, Rondeau Provincial Park and Prince Edward Point as they move towards their breeding grounds (Petrucha *et al.* 2013).

In Michigan, Kirtland's Warblers arrive on their breeding grounds at the beginning of May (Mayfield 1992), usually in the period between the 3rd and 12th of May (Mayfield 1960). However, some are documented to have arrived as late as 5 June in Michigan (Rockwell *et al.* 2012). The total duration of spring migration ranges between 13 and 23 days (Ewert *et al.* 2012). Once on the breeding grounds, males occupy a territory between 0.6 ha to more than 10 ha in size, the average being 8.4 ha (Walkinshaw 1983). There is strong site fidelity, and males usually return to the same territories in subsequent years (Walkinshaw 1983). Males defend their territory by singing persistently and chasing away other male Kirtland's Warblers along with other bird species (Walkinshaw 1983, Mayfield 1992). Individuals depart from

their breeding grounds in late August or September and return to their wintering grounds in the Bahamas over 2000 km away (Sykes *et al.* 1989).

Historically, the Kirtland's Warbler was found in the Petawawa area in suitable breeding habitat. Harrington (1939) noted that they were "not uncommon" to the Jack Pine (*Pinus banksiana*) of Petawawa and suspected that they were breeding on the military base. Singing males were heard at Garrison Petawawa in 1916, 1939, 1946, 1977 and 1978, but nesting was not detected (Harrington 1939, Aird 1977, Hibbard and Aird 1978, Cadman *et al.* 1987). Since their re-discovery in 2006, Kirtland's Warblers have been surveyed and monitored annually at Garrison Petawawa. The purpose of this paper is to provide information on arrival dates, territory sizes and habitat use of Kirtland's Warbler at Garrison Petawawa.

Observations and Discussion

Since 2006, between May and August, surveying and monitoring of Kirtland's Warblers were conducted in suitable habitat by the author and supporting staff. Over this time period, a total of seven different males and between four and six different females was detected (Figure 1, Figure 2). Not all females could be distinguished due to the lack of leg-bands as identifiers, but assumptions were made based on mates and locations. Males were distinguished based on leg-bands, unique calls, territory locations and photographs. The number of singing males detected each year during the May to June survey period is illustrated in Figure 3.

Figure 2: Female Kirtland's Warbler at Garrison Petawawa. Photo: Tammy Richard/DND



Figure 3: Number of singing male Kirtland's Warblers detected during the annual survey at Garrison Petawawa. Tammy Richard/DND

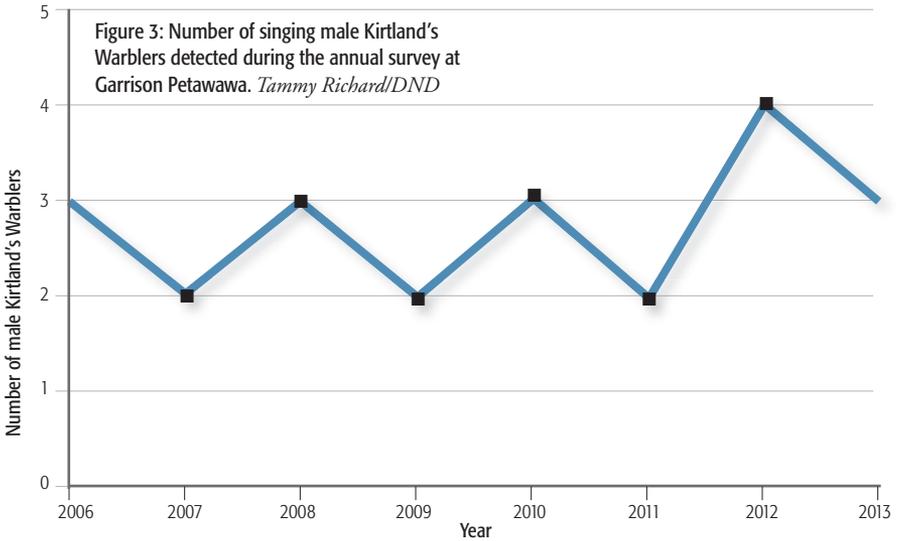


Table 2: Kirtland's Warbler survey and monitoring results, Garrison Petawawa, 2006-2013

Date detected	Bird	Observation dates	Banded (Y/N)	Banding location (date)	Nest detected (Y/N)	Comments
6 June 2006	Male 1	6-7 June	N		N	
7 June 2006	Male 2	7 June – 7 July	Y	CFB Petawawa	N	
13 June 2006	Male 3	13 June	N		N	
13 May 2007	Male 2	13 May – 17 July	Y	CFB Petawawa (2006)	N	
18 June 2007	Male 1	18 June – 10 July	Y	CFB Petawawa	Y	
28 June 2007	Female 1	28 June – 10 July	Y	CFB Petawawa	Y (w/Male 1)	Nest w/2 young and 2 eggs
15 May 2008	Male 2	15 May – 16 July	Y	CFB Petawawa (2006)	Y	
30 June 2008	Female 2	30 June – 14 August	N		Y (w/Male 2)	Nest w/4 young
22 May 2008	Male 4	22 May – 7 July	Y	Bahamas (2007)	N	
15 May 2008	Male 1	15 May – 27 June	Y	CFB Petawawa (2007)	N	
11 May 2009	Male 2	11 May – 30 June	Y	CFB Petawawa (2006)	Y	
25 May 2009	Female 2?	25 May – 24 June	N		Y (w/Male 2)	Nest w/4 eggs
15 May 2009	Male 4	15 May – 30 June	Y	Bahamas (2007)	Y	
21 May 2009	Female 3	21 May – 24 June	N		Y (w/Male 4)	Nest w/5 eggs
13 May 2010	Male 2	13 May – 15 July	Y	CFB Petawawa (2006)	N	Found w/female and 2 fledglings
26 May 2010	Male 4	26 May – 15 July	Y	Bahamas (2007)	Y	Nest w/5 eggs
11 June 2010	Female 3?	11-30 June	N		Y (w/Male 4)	
6 July 2010	Male 5	6-7 July	N		N	
12 May 2011	Male 2	12 May – 12 August	Y	CFB Petawawa (2006)	N	
24 May 2011	Male 5	24 May – 19 July	N		N	
25 May 2011	Female 4	25 May – 19 July	N		N	Found w/male 5
22 May 2012	Male 2	22 May – 31 July	Y	CFB Petawawa (2006)	N	
14 May 2012	Male 5	14 May – 15 August	N		Y	
11 June 2012	Female 4 or 5?	11 June – 27 July	N		Y (w/male 5)	Nest w/5 eggs
6 June 2012	Male 6	6-20 June	N		N	
6 June 2012	Male 7	6 June – 5 July	N		N	
9 May 2013	Male 6	9 May – 26 July	N		N	
31 May 2013	Female 6?	31 May – 20 June	N		N	Found w/male 6
14 May 2013	Male 5	14 May – 4 June	N		N	
30 May 2013	Male 7	30 May – 4 June	N		N	



Figure 4: Male Kirtland's Warbler detected at Garrison Petawawa in 2006, which returned every year up to and including 2012.

Photo: Tammy Richard/DND

At Garrison Petawawa, the earliest male arrival date is 9 May. Males occupied territories between 0.47 ha and 12.1 ha, which is consistent with the information provided by Walkinshaw (1983). Most males returned to Garrison Petawawa in at least one subsequent year, to a similar territory location, exhibiting strong site fidelity. A complete account of Kirtland's Warbler arrival dates, observations dates, banding and nest information is provided in Table 2.

One male, banded on the property as an After Second Year (ASY) in July 2006, returned for six consecutive years and was last sighted by the author on 31 July 2012 (Figure 4). He did not return in 2013. Based on his age in 2006, this male was

likely 9 years old in 2012. The average lifespan of males is 4.0 ± 1.90 years, while females live 2.5 ± 1.8 years (Mayfield 1992). Interestingly, the oldest male on record is an 11 year old from the Lower Peninsula of Michigan (Ewert 2005, USFWS 2012).

Another male that was banded in the Bahamas in February 2007 arrived in Petawawa in May 2008 (Figure 5). He returned in 2009 and 2010 and bred successfully both years. As many as two pairs have been detected on the property in a given year. At least 27 fledglings have been produced thus far; numbers, however, are approximate because not all fledglings can be accounted for after leaving the nest. Furthermore, monitoring did not involve active nest searches due to restrictions in permit conditions by the regulatory agency.





Left: Figure 5: Male Kirtland's Warbler banded in the Bahamas in February 2007 detected at Garrison Petawawa from 2008-2010. Photo: Tammy Richard/DND

Above: Figure 6: Typical Kirtland's Warbler habitat at Garrison Petawawa. Typical Kirtland's Warbler habitat on the property is composed of Jack Pine, mixed with Red Pine (*Pinus resinosa*) and White Pine (*Pinus strobus*), that is under 20 years old and is accompanied by ground cover such as Low-sweet Blueberry (*Vaccinium angustifolium*), Sweet Fern (*Comptonia peregrina*), lichens (*Cladonia* spp.) and mosses (Richard 2013) Photo: Tammy Richard/DND

In July 2012, drought conditions resulted in a fire in a portion of the Kirtland's Warbler habitat, consuming 200 ha of forest (Figure 7). Fire officials at Garrison Petawawa confirmed that based on lightning data from the Ontario Ministry of Natural Resources, physical evidence and the behavior of the fire, the fire was due to a lightning strike (DND Fire Authority 2012). No Kirtland's Warblers were harmed during the fire. One pair remained on territory near the fire, while one lone male in the fire zone moved to an alternate location for the remainder of the season. It is very likely that future habitat will be available for Kirtland's Warblers as a result of the fire. Most Jack Pine trees were of seed-producing maturity and most exhibited open cones following the fire. However the quality and extent of the habitat cannot be predicted at this time, as several factors, including climatic conditions and moisture, affect Jack Pine growth following a fire.



Figure 7: Forest fire, caused by a lightning strike, burned a portion of Kirtland's Warbler habitat in July 2012. Photo was taken one week after the fire began.
Photo: Tammy Richard/DND



The Kirtland's Warbler population at Garrison Petawawa appears to be stable. Birds have continually returned to the property indicating the quality of habitat available and the protection mechanisms in place. Kirtland's Warblers are protected on the property as per the federal *Species at Risk Act* (2002) and the Kirtland's Warbler population is at a record high, with 2024 singing males detected in North America in 2013 (USDA Forest Service 2013). Additional Kirtland's Warblers are likely to be found on military land, and further surveying in other areas of Ontario and Quebec may also reveal additional populations.

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