

An Annotated List of Ornithological References For Michigan Foresters

This compilation is intended to provide a list of references for individuals interested in the ecological effects of forestry practices on birds. Nine categories of references are included. References that summarize research literature have been preferentially selected so as to be concise. Those wishing a more detailed list should investigate the literature cited sections of the references below that are pertinent to their interests. This would be most efficiently accomplished for most by examining Sallabanks and Arnett (2005). It may also be worth noting that although the papers from *The Auk*, *Condor*, and *Wilson Bulletin* cited below are too recent, all past issues of these journals through the year 2000 (1999 for *Wilson Bulletin*) are downloadable via the browse section of SORA at <http://elibrary.unm.edu/sora/>.

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1-Management Guides

Green, Janet. 1995. **Birds and forests, a management and conservation guide**. Minnesota Department of Natural Resources. St. Paul, MN. - This is an excellent source of information. For availability, e-mail the Minnesota DNR Information Center at info@dnr.state.mn.us or call (651) 296-6157 or (800) 657-3929. For edge effect research conducted within this study site too late for inclusion, see *Auk* 119:955-970.

Ontario's Ministry of Natural Resources (MNR) provides direction to the forest industry and individuals and groups that use the province's forest resources through a set of forest management guides, including the following four, available at: <http://ontariosforests.mnr.gov.on.ca/guides.cfm>

James, Ross D. 1984. Habitat management guidelines for cavity-nesting birds in Ontario. Ontario Ministry of natural Resources #51604, ISBN 0-7794-2351-8 (Internet), 40 pp.

James, Ross D. 1984. Habitat management guidelines for warblers of Ontario's northern coniferous forests, mixed forests, or southern hardwood forests. Ontario Ministry of natural Resources #51605, ISBN 0-7794-2353-4 (Internet), 31 pp.

James, Ross D. 1984. Habitat management guidelines for Ontario's forestnesting accipiters, buteos, and eagles. Ontario Ministry of natural Resources #51607, ISBN 0-7794-2357-7 (Internet), 23 pp.

Naylor, Brian J., James A. Baker, David M. Hogg, John G. McNicol, and W. Robert Watt. 1996. Forest Management Guidelines for the Provision of Pileated Woodpecker Habitat VERSION 1.0. 34 pp.

Rosenberg, Kenneth, Ralph Hames, Ronald Rohrbaugh, Sara Swarthout, James Lowe, and Andre Dhondt. 2003. **A land manager's guide to improving habitat for forest thrushes.** The Cornell Lab of Ornithology, Ithaca, NY.

Available to order or download at

<http://www.birds.cornell.edu/conservation/thrush/>

Rosenberg, Kenneth, Ronald Rohrbaugh, Sara Barker, James Lowe, Ralph Hames, and Andre Dhondt. 1999. **A land manager's guide to improving habitat for Scarlet Tanagers and other forest-interior birds.** The Cornell Laboratory of Ornithology, Ithaca, NY.

Available to order or download at

<http://www.birds.cornell.edu/conservation/tanager/>

Sallabanks, Rex, and Edward B. Arnett. 2005. **Accommodating birds in managed forests of North America: a review of bird-forestry relationships.** USDA Forest Service Gen. Tech. Rep. PSW-GTR-191.

A succinct, yet comprehensive analysis of research published between 1960 and 2002 concerning the effects of silvicultural methodology on birds. It is quite well done, and perusal of the literature cited section supplies quick access to titles of interest.

Sample, David W., and Michael J. Mossman. 1997. **Managing habitat for grassland birds: A guide for Wisconsin.** Wisconsin Department of Natural Resources PUBL-SS-925-97. 154 pp.

Although written for Wisconsin, this is the best/most relevant publication currently available for management of habitat for grassland (openland) species of the UP. An electronic version can be viewed or downloaded at:

<http://www.npwrc.usgs.gov/resource/2002/wiscbird/wiscbird.htm>

2-Conservation/Management Plans

Askins, Robert A. 2000 and 2002. **Restoring North America's Birds: Lessons from Landscape Ecology**, 2nd Ed. Yale University Press, New Haven and London. ISBN 0-300-07967-2. Paper, \$30.00.

Review by Kathryn E. Sieving in The Auk 117(3):842-844, 2000

Anyone questioning why wild birds are "flagships for conservation" will find their answers in this wonderful book. Robert Askins' eyes-wide-open approach to the task set forth in the title is utterly engaging, and, although clearly for people with avian affinities, it is especially relevant for conservation biologists from all walks of life.

Reading Askins book was like being a student in a field course! In the first nine chapters (of a total of 10), I romped through the major biomes and habitats of North America, looking at each through the eyes of an experienced and impassioned naturalist-ornithologist. In each chapter, Askins focuses on a region's bird species and communities that are declining, at risk of decline or extinction, or are already extinct. Then, he systematically employs foreshadowing to prepare readers for the central lesson that "Conservation of birds depends on a clear understanding of both their habitat requirements and how their habitats are sustained." To convey the complexities of this truth, Askins builds each focal ecosystem step by step, attending to historical generative processes (biotic and abiotic), presettlement distributions and species composition of the vegetation, as well as key requirements of the bird species at risk. Then, using copious scientific results woven into a pleasing format, Askins explains what features of the system are needed to maintain species at risk, and, in turn, how these features are generated and maintained. Chapter conclusions extend understanding of processes that maintain the habitat in the condition and at the scale needed by the species at risk, to what it will take to protect those processes.

Faaborg, John. 2002. **Saving Migrant Birds: Developing Strategies for the Future**. University of Texas Press. Austin, Texas, xvi + 226 pp., 11 photos, 21 figures. Paper, ISBN 0-292-72548-5, \$22.95. Hardcover, ISBN 0-292-72544-2, \$50.00.

Reviewed by Jane A. Fitzgerald in The Auk, April 2003.

Saving Migrant Birds is an often witty and consistently provocative look at the scientific evidence that caused widespread concern for the plight of Neotropical migratory birds and led to the development of the Partners in Flight (PIF) bird conservation initiative. Told through the eyes of John Faaborg, an esteemed avian ecologist, the book questions whether Neotropical migrants are indeed in dire need of conservation attention and whether the response by the conservation community (i.e. PIF) was truly warranted. Faaborg does, however, go on to suggest that the future of bird conservation and our ability to thwart new threats to migratory bird populations will certainly be helped by the research, communication,

coordination, and bird conservation planning that have resulted since PIF's inception. The author does an excellent job with the subject matter, providing a clear explanation of how the science that is guiding much of bird conservation today developed. Sprinkled throughout are many anecdotes of how he, his students, and closest colleagues continually reviewed and questioned evidence that derived from their own research, as well as that of others; these provide a refreshing "insiders" look at scientific scrutiny at play. See the complete review at: http://www.findarticles.com/p/articles/mi_qa3793/is_200304/ai_n9167271#continue

Herkert, J., R. Szafoni, V. Kleen, J. Schwegman. 1993. **Habitat establishment, enhancement and management for forest and grassland birds in Illinois.** Natural Heritage Technical Publication 1. Illinois Department of Conservation, Springfield, Illinois. This publication provides quick access to specific recommendations on grassland and forest management. However, much of the forest information will not be appropriate for northern Michigan. Those interested in grassland management should also see <ftp://ftp-fc.sc.egov.usda.gov/WHMI/WEB/pdf/GRASS1.pdf>

Please Note: Control of haying date is perhaps the easiest means of significantly increasing the ability of managed grasslands to support avian reproduction. For Bobolinks at the latitude of Ithaca, N.Y., this is the middle of May (Bollinger, E., P. Bollinger, and T. Gavin. 1990. Effects of hay-cropping on eastern populations of the Bobolink. Wildlife Society Bulletin 18:142-150.

Rich, T. D., C. J. Beardmore, H. Berlanga, P. J. Blancher, M. S. W. Bradstreet, G. S. Butcher, D. W. Demarest, E. H. Dunn, W. C. Hunter, E. E. Inigo-Elias, J. A. Kennedy, A. M. Martell, A. O. Panjabi, D. N. Pashley, K. C. Rosenberg, C. M. Rustay, J. S. Wendt, T. C. Will. 2004. **Partners in Flight North American landbird conservation plan.** Cornell Lab of Ornithology. Ithaca, N.Y.

A PIF publication that provides regional analysis of habitats used by birds, describes regional conservation issues, recommends actions, and provides global population estimates of all North American landbirds. Ordering information or download at <http://www.partnersinflight.org/>.

Partners in Flight bird conservation plan for the boreal hardwoods transition. This plan includes the northern half of Michigan. It can be accessed for downloading from the PIF homepage (<http://www.partnersinflight.org/>) by clicking on the link to "All Bird Conservation Plans". Those interested in the effects of residual tree retention on boreal songbirds may want to read Tittler, R., S. Hannon, and M. Norton. 2001. Residual tree retention ameliorates short-term effects of clear-cutting on some boreal songbirds. Ecological Applications 11:1656-1666.

Partners in Flight bird conservation plan for the upper great lakes plain. Go to the PIF homepage at <http://www.partnersinflight.org/>, and click on

link to “All Bird Conservation Plans”. This plan is downloadable, and includes the southern half of Michigan.

U.S.F.W.S. Regional Shorebird Conservation Plan. Current plans are downloadable at <http://www.fws.gov/shorebirdplan/>.

3-A Brief History of Bird Conservation in the United States

Early bird conservation efforts were driven by species extinctions and population reductions due to market hunting (both for meat and the feather trade) and unregulated subsistence hunting.

AOU: American Ornithologists' Union (<http://www.aou.org/>)

Lacey Act (<http://www.animallaw.info/articles/ovuslaceyact.htm>)

The Lacey Act originally made it a federal crime to participate in interstate commerce of birds and mammals taken illegally. Its purpose was to hinder the interstate feather and wildlife meat trade and allow for control of introduction of non-native species. It has been amended repeatedly and now protects reptiles, amphibians, mollusks, and crustaceans and is applied to international trade in wildlife.

IAFWA: International Association of Fish and Wildlife Agencies, (<http://www.iafwa.org/>)

IAFWA changed its name to AFWA (Association of Fish and Wildlife Agencies) as of 1 May 2006.

NWR: National Wildlife Refuge

America's National Wildlife Refuge System (<http://www.fws.gov/refuges/>)

National Audubon Society (<http://www.audubon.org/>)

Michigan Audubon Society (<http://www.michiganaudubon.org/>)

Migratory Bird Treaty Act (<http://www.fws.gov/laws/lawsdigest/migtrea.html>)

The MBTA is the federal statute that implements migratory bird treaties that the United States signed with Great Britain (for Canada), Mexico, Soviet Union (now Russia), and Japan. Each treaty offers slightly different protections to slightly different groups of birds; the MBTA combines these protections into a single law that covers virtually all migratory birds which winter, breed, or migrate in or through the United States. The MBTA prohibits the taking or possession of protected species and the parts, eggs, or nests of protected species. The MBTA was recently amended to explicitly remove protections for non-native migratory birds. The MBTA

does not offer protection to non-migratory species (ex. wild turkey, ruffed grouse, etc.).

Early responses to the need to conserve the avian resources of the Americas included restrictions on take and the setting aside of land, primarily associated with migratory game species. Much bird conservation during this period focused on individual species, generally in the context of season setting for game species.

Michigan Department of Conservation (<http://www.michigan.gov/dnr/>)

In 1920, the Department of Conservation was formed by combining a number of separate state government agencies and programs. The Game Division within the Department (now the Wildlife Division) originated in 1927. It was renamed the Michigan Department of Natural Resources in 1968.

Migratory Bird Conservation Act

(<http://www.fws.gov/laws/lawsdigest/migbird.html>)

Prior to the Migratory Bird Conservation Act, acquisition of land for the National Wildlife Refuge System was often opportunistic. The MBCA established a commission to direct land acquisitions for the Refuge System.

Federal Duck Stamp: Migratory Bird Hunting and Conservation Stamp Act

(<http://jpl.unm.edu/cwl/fedbook/mbhcsa.html>)

The Migratory Bird Hunting and Conservation Stamp Act established a federal stamp that must be purchased to legally hunt migratory waterfowl in the country. Funds raised from the sale of the stamp are earmarked for the acquisition of National Wildlife Refuge lands.

P-R: Federal Aid in Wildlife Restoration (Pittman-Robertson)

(<http://federalaid.fws.gov/wr/fawr.html>)

P-R funds are derived from excise taxes on sporting arms, handguns, ammunition, and archery equipment. These funds are apportioned to state wildlife and natural resource agencies, and must be matched by at least 25% non-federal funds. P-R dollars may be used for the conservation of birds and mammals and for hunter education.

Flyway Councils (http://centralflyway.org/pdf/Circular78_Pictures.pdf)

The flyway councils are formal organizations of state wildlife and natural resource agencies and the US Fish and Wildlife Service. Their primary purpose has been to coordinate harvest regulations on migratory waterfowl. Long term trends in habitat loss, environmental contamination, and bird population declines changed the emphasis of bird conservation. Non-game species garnered attention at much higher levels than they had since the days of the feather trade. The magnitude of issues facing bird

conservation led to the formation of taxa oriented conservation partnerships and the development of taxa oriented conservation plans. Greater emphasis was placed on identifying and conserving habitat used by larger suites of species during breeding, wintering, and migration.

BBS: North American Breeding Bird Survey (<http://www.pwrc.usgs.gov/BBS/>)
Started in 1966, this is an annual survey along road transects.

ESA: Endangered Species Act (<http://www.fws.gov/endangered/whatwedo.html>)

WHSRN: Western Hemisphere Shorebird Reserve Network
(<http://www.manomet.org/WHSRN/>)

NAWMP: North American Waterfowl Management Plan
(<http://www.fws.gov/birdhabitat/NAWMP/index.shtm>)

PIF: Partners In Flight (<http://www.partnersinflight.org/>)

WCP: North American Waterbird Conservation Plan
(<http://www.waterbirdconservation.org/>)
Developed by Waterbird Conservation for the Americas

USSCP: United States Shorebird Conservation Plan
(<http://www.fws.gov/shorebirdplan/>)

LCP: North American Landbird Conservation Plan
(http://www.partnersinflight.org/cont_plan/default.htm)
Developed by Partners in Flight

The natural progression from these large scale, taxonomically grouped plans was conservation that considered all species of birds. This has led to partnerships which address issues which impact multiple species and a focus on species groupings which are dependent on different habitat components.

JVs: Joint Ventures (<http://www.fws.gov/birdhabitat/JointVentures/index.shtm>)
Joint Ventures evolved out of the North American Waterfowl Management Plan and originally dealt primarily with waterfowl conservation. Each JV is a partnership of government agencies, non-governmental organizations, and individuals. JVs may have a geographical (ex. Upper Mississippi River/Great Lakes) or species (ex. American black duck) focus. As integrated bird conservation has developed, JVs have expanded their focus to include habitat conservation of other bird species.

NABCI: North American Bird Conservation Initiative (<http://www.nabci-us.org/>)

NABCI provides guidance and support for the process of integrated bird conservation.

Expanded Flyway System

(http://www.iafwa.org/Attachments/bird_conservation/Expanded_Flyway_proposal_final.pdf)

An expanded flyway system has been proposed which would provide a forum for discussion of non-game and non-waterfowl issues within the existing flyway structure. This move was driven by a need by federal wildlife managers to contact state wildlife managers and coordinate regulatory responses to issues that have arisen which are outside the purview of the existing flyway mission.

MBCP: Montana Bird Conservation Partnership

(<http://biology.dbs.umt.edu/landbird/mbcp/mbcp.htm>)

WBCI: Wisconsin Bird Conservation Initiative (<http://www.wisconsinbirds.org/>)

NPABC: Nebraska Partnership for All Bird Conservation

(<http://www.nebraskabirds.org/>)

MoBCI: Missouri Bird Conservation Initiative (<http://66.235.215.162/index.html>)

OBCI: Ohio Bird Conservation Initiative (<http://www.obcinet.org/>)

MiBCI: Michigan Bird Conservation Initiative (<http://www.mibci.org/>)

4-Michigan Birds

Brewer, Richard, Gail A. McPeck, and Raymond I. Adams, Jr. 1991. The atlas of breeding birds of Michigan. Michigan State University Press, East Lansing.

An outstanding work that provides range maps for all species breeding within the state, a description of their habitat requirements, status, and conservation challenges. It also includes information on climate, presettlement vs. current vegetation patterns, soils, presettlement avifauna, and climate data statewide. Data are currently being gathered to update this atlas, but it is still a valuable reference.

Chartier, Allen T., and Jerry Ziarno. 2004. A birder's guide to Michigan.

American Birding Association. Colorado Springs, Colorado.

This book describes routes birders can travel in search of prime birding locations and/or specific species within our state. It does not contain information pertaining to forest management. However, it is unique in including bar graphs of seasonal presence and abundance for the U.P. vs. Upper L.P. vs. Lower L.P. for the vast majority of avian species occurring in Michigan. These data are presented on pages 597-620 and may be of use to some managers.

Granlund, James, Gail A. McPeck, Raymond J. Adams, Philip C. Chu, Jack Reinoehl, Charles Nelson, Richard Schinkel, Michael Kielb, Stephen Allen, and Andrea Trautman. 1994. The birds of Michigan. Indiana University Press. Bloomington and Indianapolis, IN.

This reference contains descriptions of the seasonal distribution and habitat usage patterns of migrants as well as breeding species.

Michigan Birds - This website (<http://www.michiganbirds.org/>) provides access to a printable checklist of the birds of Michigan, the Michigan Breeding Bird Atlas homepage and BBA maps, the Michigan Bird Conservation Initiative, Bird Species of Concern lists by county, the Michigan Birds Records Committee, and numerous other websites concerning Michigan birds.

5-Recent Literature Addressing Bird/Forest Management Ecology in Michigan

Edde, Jerry. 2005. Bird population trends in managed and un-managed northern hardwood forests: a comparison of long-term databases from national forests in the great lakes and New Hampshire. Michigan Birds and Natural History 12:98-117.

This paper compares the results of breeding bird surveys conducted in the U.P.'s Ottawa National Forest with those from other regions of similar latitude.

Johnson, Brian. 2004. (Unpublished report): The Ottawa National Forest Breeding Bird Census: an analysis of twelve years of data.

This report can be downloaded at
http://www.fs.fed.us/r9/ottawa/forest_management/wildlife/index.html.

Corace, Gregory III, P. Charles Goebel, and Thomas C. Wyse. 2005. A landscape to field-scale assessment of the bird communities of historic openlands at Sleeping Bear Dunes National Lakeshore. Michigan Birds and Natural History 12:169-181.

This study investigated bird communities inhabiting successional openlands within a forested region of Michigan's Lower Peninsula.

6-Bird Survey Techniques

Bibby, C. J., Neil D. Burgess, David A. Hill, and Simon H. Mustoe. 2000. Bird census techniques, 2nd edition. Academic Press, N.Y.

A text that explains a wide variety of methods for surveying bird populations.

Howe, R. W., G. H. Niemi, S. J. Lewis, and J. D. Brawn. 2001. A standard method for monitoring songbird populations in the Great Lakes region. *The Passenger Pigeon* 59:183-194.

This paper recommends a standardized approach to point counts, and can be accessed by surfing from the website of the WI Society for Ornithology (<http://www.uwgb.edu/birds/wso/>).

Patuxent Wildlife Research Center's Website (<http://www.pwrc.usgs.gov/bbs/>).

Patuxent's website provides access to a description of the methodology used for conducting roadside surveys (BBS), as well as survey results, population trend graphs, maps, etc. See Condor 106:801-814 for explanation of a bias that should be considered when interpreting population trends indicated by BBS data.

Ralph, C. John, Geoffrey R. Geupel, Peter Pyle, Thomas E. Martin, and David DeSante. 1993. Handbook of field methods for monitoring landbirds. U.S.D.A. Forest Service Gen. Tech. Rep. PSW-GTR-144.

These authors have created what is likely the most concise description of almost all major methods of surveying landbirds available (BBS not covered).

Ralph, C. John, John R. Sauer, and Sam Droege, Eds. 1997. Monitoring bird populations by point counts. U.S.D.A. Forest Service Gen. Tech. Rep. PSW-GTR-149.

This is a fine work that evaluates many of the problems associated with point counts. It provides particularly helpful recommendations for their use on pages 161-168. For additional considerations when using point counts, consult Auk 119:18-53, and Condor 107:305-320.

Takats, D. L., C. M. Francis, G. L. Holroyd, J. M. Duncan, K. M. Mazur, R. J. Cannings, W. Harris, and D. Holt. 2001. Guidelines for nocturnal owl monitoring in North America. Beaverhill Bird Observatory and Bird Studies Canada. Edmonton, Alberta.

Hard or downloadable copies of this paper can be obtained at <http://www.beaverhillbirds.com/bboraptorsowlsurveys.htm>. These guidelines have been modified for use in the western great lakes by David Grossheusch of Hawk Ridge Bird Observatory (see <http://www.hawkridge.org/>), and for use as part of the Michigan Breeding Bird Atlas as explained by Michael Monfils and Peter Pearman of the Michigan Natural Features Inventory (see <http://web4.msue.msu.edu/mnfi/pub/publications00.cfm>). Effort required by each of these approaches varies significantly due to the degree to which broadcast tapes are used. All three should be compared before a choice is made.

7-Ancillary Topics – A number of attendees are particularly interested in woodpeckers, fungi, and/or blowdowns. For them:

Bednarz, J. C., et al. 2004. Special section: Cavity nesters and keystone processes. *Condor* 106:1-59.

This is a collection of research papers on woodpecker/forest ecology. A noteworthy investigation of fungal dispersal by physical factors vs. woodpeckers is included.

Burris, J. M., and A. W. Haney. 2005. Bird communities after blowdown in a late-successional great lakes spruce-fir forest. *Wilson Bulletin* 117:341-352.

8-Non-Annotated References on Birds and Forestry

Adams, Elizabeth M., and Michael L. Morrison. 1993. Effects of forest stand structure and composition on red-breasted nuthatches and brown creepers. *The Journal of Wildlife Management* 57: 616-29.

Buford, Ernest W., and David E. Capen. 1999. Abundance and productivity of forest songbirds in a managed, unfragmented landscape in Vermont. *The Journal of Wildlife Management* 63, no. 1: 180-8.

Costello, Christine A., Mariko Yamasaki, and Peter J. Pekins. 2000. Songbird response to group selection harvests and clearcuts in a New Hampshire northern hardwood forest. *Forest Ecology and Management* 127, no. 3: 41-54.

DeGraaf, Richard M. 1992. Effects of even-aged management on forest birds at northern hardwood stand interfaces. *Forest Ecology and Management* 47: 95-110.

DeGraaf, Richard M., Jay B. Hestbeck, and Mariko Yamasaki. 1998. Associations between breeding bird abundance and stand structure in the White Mountains, New Hampshire and Maine, USA. *Forest Ecology and Management* 103, no. 2-3: 217-33.

Duguay, Jeffrey P., Petra Bohall Wood, and Gary W. Miller. 2000. Effects of timber harvests on invertebrate biomass and avian nest success. *Wildlife Society Bulletin* 28: 1123-31.

Germaine, S. S., S. H. Vessey, and D. E. Capen. 1997. Effects of small forest openings on the breeding bird community in a Vermont hardwood forest. *Condor* 99: 708-18.

Hagan, J. M., P. S. McKinley, A. L. Meehan, and S. L. Grove. 1997. Diversity and abundance of landbirds in a northeastern industrial forest. *Journal of Wildlife Management* 61: 718-135.

Hobson, K. A., and J. Schieck. 1999. Changes in bird communities in boreal mixedwood forest: harvest and wildfire effects over 30 years. *Ecological Applications* 9: 849-63.

*Abstract: A current paradigm in conservation biology is that forest harvest practices that better approximate natural disturbance processes are more likely to conserve biodiversity. We contrasted bird communities in three replicate stands in each of 1, 13-15, and 22-28 yr old forests following wildfire and harvest in north-central Alberta, Canada. Stands were chosen from old (>120 yr) boreal mixedwood forests having greater than or equal to 95% of the canopy trees killed during fire, and harvested sites retaining an average of 6% of the pre-harvest canopy trees. For all age classes, postharvest sites tended to have greater bird abundance. Species composition also differed between these treatment types. Two-Way Indicator Species Analysis (TWINSpan) identified five major ecological groupings of species that differed between wildfire and harvest, and among stand ages. Correspondence analysis (CA) identified similar bird communities. Greatest differences between bird communities occurred immediately following disturbance, and gradual convergence of communities occurred throughout the first 28 yr after disturbance. Species associated with open shrub and grassland or riparian habitats were associated primarily with 1-yr postharvest stands. Three-toed Woodpeckers (*Picoides tridactyla*) and Black-backed Woodpeckers (*P. arcticus*), together with other species that use snags for foraging or nesting, occurred primarily in 1-yr postwildfire stands. Convergence in avian communities was correlated with the loss of standing snags on postwildfire sites. However, differences in bird communities were apparent up to 28 yr following disturbance, and this lack of complete convergence has important consequences for sustainable forestry practices designed to maintain biodiversity in the boreal mixedwood forest. Notably, Connecticut Warbler (*Oporornis agilis*), Brown Creeper (*Certhia americana*), Winter Wren (*Troglodytes troglodytes*), and American Robin (*Turdus migratorius*) had higher densities on postwildfire than on postharvest stands. Lincoln's Sparrow (*Melospiza georgiana*), Alder Flycatcher (*Empidonax alnorum*), Tennessee Warbler (*Vermivora peregrina*), Black-and-white Warbler (*Mniotilta varia*), American Redstart (*Setophaga ruticilla*), Mourning Warbler (*Oporornis philadelphia*), Rose-breasted Grosbeak (*Pheucticus ludovicianus*), Canada Warbler (*Wilsonia canadensis*), and Pine Siskin (*Carduelis pinus*) had higher densities on postharvest stands, possibly due to the greater abundance, after harvest, of larger live residual trees and a taller and more dense shrub layer. Harvest designed to approximate stand-replacing fires may require the retention of more snags than is currently practiced. New approaches to fire salvage logging are also*

required to ensure adequate retention of standing dead trees on the landscape.

King, D. I., and R. M. DeGraaf. 2000. Bird species diversity and nesting success in mature, clearcut and shelterwood forest in northern New Hampshire, USA. *Forest Ecology and Management* 129: 227-35.

———. 2002. The effect of forest roads on the reproductive success of forest-dwelling passerine birds. *Forest Science* 48: 391-96.

Lindenmayer, D. B., and J. F. Franklin. 2002. *Conserving Forest Biodiversity: A Comprehensive Multiscaled Approach*. Washington, D.C.: Island Press.

Marzluff, J. M., J. J. Millspaugh, K. R. Ceder, C. D. Oliver, J. Withey, J. B. McCarter, C. L. Mason, and J. Cornnick. 2002. Modeling changes in wildlife habitat and timber revenues in response to forest management. *Forest Science* 48: 191-202.

Marzluff, J. M., M. G. Raphael, and R. Sallabanks. 2000. Understanding the effects of forest management on avian species. *Wildlife Society Bulletin* 28: 1132-43.

Mitchell, M. S., R. A. Lancia, and J. A. Gerwin. 2001. Using landscape-level data to predict the distribution of birds on a managed forest: effects of scale. *Ecological Applications* 11: 1692-708.

Morrison, M. L. 1992. Bird abundance in forests managed for timber and wildlife resources. *Biological Conservation* 60: 127-34.

Sallabanks, Rex, Edward B. Arnett, and J. M. Marzluff. 2000. An evaluation of research on the effects of timber harvest on bird populations. *Wildlife Society Bulletin* 28: 1144-55.

Sallabanks, Rex, and John M. Marzluff. 2000. Forest management and bird populations: an introduction. *Wildlife Society Bulletin* 28: 1086-87.

Schieck, J., K. Stuart-Smith, and M. Norton. 2000. Bird communities are affected by amount and dispersion of vegetation retained in mixedwood boreal forest harvest areas. *Forest Ecology and Management* 126, no. 2: 239-54.

Schulte, Lisa A., and Gerald J. Niemi. 1998. Bird communities of early-successional burned and logged forest. *The Journal of Wildlife Management* 62, no. 4: 1418-29.

Thompson, F. R. III, J. D. Brawn, S. Robinson, J. Faaborg, and R. L. Clawson. 2000. Approaches to investigate effects of forest management on birds in eastern deciduous forests: How reliable is our knowledge? *Wildlife Society Bulletin* 28: 1111-22.

Thompson, F. R. III, and D. E. Capen. 1988. Avian assemblages in seral stages of a Vermont forest. *Journal of Wildlife Management* 52: 771-77.

Thompson, F. R. III, J. R. Probst, and M. G. Raphael. 1995. Impacts of silviculture: overview and management recommendations. In *Ecology and management of neotropical migratory birds: A synthesis and review of critical issues*. Edited by T. E. Martin, and D. M. Finch, pages 201-19. New York: Oxford University Press.

Thompson, I. D., J. A. Baker, and M. Ter-Mikaelian. 2003. A review of the long-term effects of post-harvest silviculture on vertebrate wildlife, and predictive models, with an emphasis on boreal forest in Ontario, Canada. *Forest Ecology and Management* 177: 441-69.

9-Internet Sites of Interest to Michigan Birders – Adapted from a list compiled by the Laughing Whitefish Audubon Society of Marquette

(These do not address the effects of forest management on birds, but may be of use in responding to questions from birders.)

Upper Peninsula, Regional, and Statewide Birding Sites:

<http://www.amazilia.net/MIHummerNet/> - *Michigan Hummer Net* - Allen Chartier's website for Michigan's hummingbird enthusiasts. It allows volunteers to participate in tracking the migration of hummingbirds through our state.

<http://www.camacdonald.com/birding/usmichigan.htm> - *Michigan Hotspots* - A site that suggests birding locations within Michigan, provides checklists, lists birding events within the state, etc.

<http://www.geocities.com/dasperymich/listers.html> - *Michigan Bird Listers State & County Compilation Totals* - Doug McWhirter's site that provides species lists for several counties, as well as personal totals reported by Michigan birders.

<http://www.manitouislandbirdssurvey.org/> - *Manitou Island Bird Survey* - This website supplies information gathered from birding surveys conducted on Manitou Island (off the tip of the Keweenaw Peninsula).

<http://www.Michiganbirds.org> - *Michigan Birds.org* - A link provider that gives easy access to key Michigan ornithological and birding organizations such as the Michigan Bird Records Committee, Michigan Breeding Bird Atlas data, an audio

library, etc. Documentations of sightings of rarities can be conveniently made from this site.

<http://www.northbirding.com> - *Northern Michigan Birding* - This is a regional site (Upper Peninsula and northern part of Michigan's Lower Peninsula) where one can report sightings, find out what others are observing, communicate with Michigan birders, and link to a wide variety of informational sites (such as i.d. training quizzes, data bases, weather, MI birding organizations, etc.). It also provides links to *Copper Country Birding* and *Central U.P. Birding News* (Marquette and Alger Counties).

http://www.umd.umich.edu/dept/rouge_river/MBRChome.html - *Michigan Birds Record Committee* - A web page that supplies access to results of MBRC meetings, rare bird report forms, the Michigan checklist, and links for Michigan birders.

<http://www.upbirders.org/> - *U.P. Birders.Org.* - A site for posting local sightings and photographs. It also provides notices of meetings and other activities of interest to birders within the U.P.

<http://www.wpbo.org/> - *Whitefish Point Bird Observatory* - This website provides notices of birding field trips around the point, observatory seasonal journals, survey reports, databases of count summaries, and daily migration reports.

General Birding Sites

<http://www.americanbirding.org> - *American Birding Association* - Provides information concerning birding events, birding trails, new publications, trips, equipment, field courses, etc. ABA also offers many items such as birding books and equipment for sale.

<http://birdingonthe.net/> - *Birding on the Net* - A source that supplies rare bird alerts for each state, directions to sightings, mailing lists, regional specialties, and an archives index. It also contains links to galleries, artists, and a variety of birding sites worldwide.

<http://www.birds.Cornell.edu/> - *Cornell Lab of Ornithology* - This important site provides all kinds of ornithological information, as well as many citizen science projects through which volunteers can make a significant contribution to ornithological research by gathering data. Projects are designed for participants of all levels of expertise, including middle school classrooms. Some examples include Project Feeder Watch, the Golden-winged Warbler Atlas Survey, Birds in Forested Landscapes, and Classroom Feeder Watch. An on-line "field guide" to birds is also provided.

<http://www.ebird.org> - *E-Bird* - A sub-site of Cornell's that allows birders to organize, store, and retrieve personal field records. The stored data are then made available to researchers providing a potential treasure chest of avian abundance and distribution data.

<http://www.geocities.com/RainForest/Canopy/6181/gulls.htm> - *Gull Identification Website* - The Gull Identification Website assists birders in their endeavors to learn how to identify individuals from this challenging subfamily.

<http://www.hummingbirds.net> - *Hummingbirds. Net* - A site for hummingbird lovers.

<http://www.shorebirdworld.org> - *Shorebird World* - An informational website for shorebird enthusiasts.

<http://www.ups.edu/biology/museum/wingphotos.html> - *University of Puget Sound* - This website provides photos of bird wings for more advanced birders to study.

<http://www.virtualbirder.com> - *The Virtual Birder* - A “game” site where you move your way through an actual national wildlife refuge or park, zoom in on birds, and identify them while navigating your way down roads and trails.