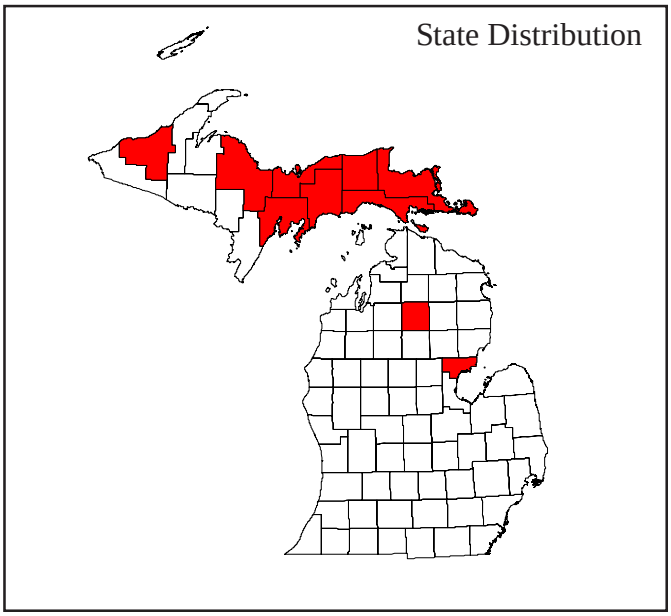
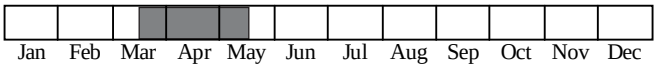
Tympanuchus phasianellus Linnaeus — sharp-tailed grouse

Copyright: Rick Baetsen



Best Survey Period



Status: State Special Concern

Global and state rank: G4/S3S4

Family: Phasianidae – Turkeys, Grouse, Pheasants, and Partridges

Total range: See Connelly et al. (1998) for a detailed description of current range and historical changes. Range encompasses west-central Quebec, Ontario, northern Michigan, Wisconsin, and Minnesota, southern Manitoba, Saskatchewan, Alberta, and British Columbian, Alaska, northeast Washington, most of North Dakota, South Dakota, and Montana, western Nebraska, northern, eastern, and south-central Wyoming, southern Idaho, northeastern Utah, and scattered locations throughout Colorado. Range is scattered and poorly known in northern Canada, including the Northwest Territories and northern Alberta, Saskatchewan, and Manitoba (Connelly et al. 1998 and sources therein). Sharp-tailed grouse historically occupied 21 states and 8 provinces, but was extirpated from California, Illinois, Iowa, Kansas, Nevada, New Mexico, Oklahoma, and Oregon by 1969 (Connelly et al. 1998 and sources therein). Connelly et al. (1998) noted that reintroductions occurred recently in Iowa, Kansas, and Oregon, and translocated sharp-tailed grouse in Idaho have moved into Nevada. Seven subspecies of sharp-tailed grouse occur in North America, with *T. p. campestris* being the subspecies present in Michigan.

State distribution: First confirmation of the species in Michigan occurred on Isle Royale (Keweenaw) in 1905 when three specimens were collected and young birds observed (Barrows 1912), although records of "prairie chickens" from 1888 and 1890 were likely sharp-tailed grouse (Ammann 1957). Ammann (1957) noted a few sharp-tailed grouse likely occurred in the western Upper Peninsula prior to 1920, and that further eastward expansion of the species was encouraged by widespread fires. By 1942, sharp-tailed grouse had expanded across the Upper Peninsula, with this movement accelerated by releases of wild-trapped birds from the western Upper Peninsula (Ammann 1957). Potential habitat was likely present historically in the southwestern Lower Peninsula, which could have supported sharp-tailed grouse, but the species was not confirmed in the Lower Peninsula prior to introductions in the late 1930s (Ammann 1957). Introductions of sharp-tailed grouse occurred on Drummond Island (Chippewa County), Beaver Island (Charlevoix County), and the mainland of the northern Lower Peninsula in Cheboygan, Alpena, Kalkaska, Benzie, and Midland counties (Wood 1951). Michigan Breeding Bird Atlas data indicated that sharp-tailed grouse was

Michigan Natural Features Inventory
P.O. Box 30444 - Lansing, MI 48909-7944
Phone: 517-373-1552

present in low numbers from Isle Royale to Drummond Island in the Upper Peninsula, while in the Lower Peninsula populations were centered in the Grayling area and the Fletcher area of Missaukee and Kalkaska counties (Reilly 1991). The figure above shows counties with confirmed breeding during the first Michigan Breeding Bird Atlas (1983-1988) or known breeding occurrences from the Michigan Natural Features Inventory database.

Recognition: This species is a medium-sized grouse measuring 41-47 cm (16-19 in) in length and weighing 596-1031 g (21-36 oz.), with weight varying by season and males being heavier (Connelly et al. 1998). Both sexes are cryptically colored, have round bodies, short legs, a short crest, **elongated central rectrices**, and **heavy barring** with **dark brown, black, and buff** on the head, neck, back, and wings (Connelly et al. 1998). Breast feathers are white with tawny drab margins, upper belly feathers are white with a dark olive subterminal V-shaped mark, and undertail coverts are white. Both sexes have feathered nostrils and legs and crescent-shaped, yellowish-orange combs over their eyes (Connelly et al. 1998 and sources therein). **Males** have a **pinkish to pale violet air sacs** on both sides of the neck, which are only inflated during breeding displays. Connelly et al. (1998) note that males have linearly marked central rectrices, while those of the female are more transversely barred and less longitudinally striped. Males make a variety of vocalizations primarily when females are present on leks (breeding display grounds). Connelly et al. (1998) and citations therein describe six major male vocalizations: 1) cackle (cackling sound given during agonistic interactions with other males), 2) chilk (sharp, bark-like note), 3) coo (short, low-frequency vocalization), 4) cork (popping sound), 5) gobble (gobbling sound of 3-5 notes), and 6) whine (whining vocalization given during interactions with other males). Vocalizations in females are not well known.

Sharp-tailed grouse could potentially be confused with ruffed grouse (*Bonasa umbellus*), female spruce grouse, and female ring-necked pheasant (*Phasianus colchicus*) in Michigan. Ruffed grouse have a dark band on the tail feathers, dark bars on the flanks, and lack the elongated central rectrices of the sharp-tailed grouse. Female spruce grouse are generally darker in appearance and lack the elongated rectrices of the sharp-tailed grouse. Tail feathers of the female spruce grouse are barred with brown and black and have a terminal buffy band, compared to the lighter colored rectrices of the sharp-tailed grouse. Female ring-necked pheasants are larger and have proportionally longer tail feathers compared to sharp-tailed grouse. Sharp-tailed grouse also have more white coloration in the breast feathers, rectrices, and undertail coverts compared to the ring-necked pheasant.

Best survey time: Surveys are best conducted in the spring when males congregate and display on leks from about mid March to mid May. Males display on leks from about dawn to an hour or so after sunrise (Reilly 1991), so surveyors are more likely to encounter sharp-tailed grouse during this period of high activity. Ammann (1957) felt surveys were most successful in April and May, on still, clear mornings, and between 4:30 AM and 7:30 AM when males were most active. Ammann (1957) recommended at least three surveys of dancing grounds, whenever practical, and listening for at least 15-20 min at a survey site before moving to the next location. A variety of techniques have been employed to survey sharp-tailed grouse, including systematic roadside counts and aerial surveys, but Ammann (1957) believed ground surveys of dancing grounds to be the most practical and accurate means of monitoring populations in Michigan.

Habitat: Connelly et al. (1998) noted that throughout its range sharp-tailed grouse breeding habitat is dominated by dense herbaceous vegetation and shrubs. Ammann (1957) described a square mile of optimum breeding habitat in Michigan as consisting of three components: 1) 6% primarily open herbaceous cover; 2) 50% an herbaceous and woody cover mix (20% woody cover overall); and 3) 44% woody cover consisting of small open clearings (about 10 ac. in size) and sparse second-growth forest (50% woody cover overall). The first open component functions primarily as dancing grounds and day or night roosting habitat for males when they congregate at leks. Ammann (1957) identified the second component as being most important and receiving most use by sharp-tailed grouse. Sharp-tailed grouse use the heavier ground cover of this component for roosting, nesting, and feeding and the lighter ground cover for loafing, dusting, and feeding. Scattered wooded portions of this component are used for feeding, nesting, resting, and

roosting (Ammann 1957). Sharp-tailed grouse use the small clearings of the more densely wooded third component for nesting and brood rearing and winter roosting during severe weather (Ammann 1957). Ammann (1957) stated that the forested portions of the third component are used for winter feeding, as escape cover during periods of heavy hunting pressure, and for protection from extreme weather. Leks, or dancing grounds, represent the core of sharp-tailed grouse breeding habitat and consist of large open areas dominated by herbaceous plants; they are typically the most sparsely vegetated portions of their habitat and often located on elevated ground (Ammann 1957, Reilly 1991, Connelly et al. 1998). Sharp-tailed grouse foraging habitats in spring and summer are dominated by forbs, while the species uses a variety of open, shrub, and woodland habitats in fall and winter (Connelly et al. 1998).

Biology: Although short movements to wintering habitat may occur, sharp-tailed grouse do not regularly migrate south of the breeding range (Connelly et al. 1998). Sharp-tailed grouse have a lek mating system, which Emlen and Oring (1977) described as a male dominance polygyny. Males congregate on leks and compete for dominance through mating displays, with females selecting mates from the aggregations (Emlen and Oring 1977). By mid March, males begin displaying on leks, with the number of males and intensity of displays peaking between about late April and mid May (Reilly 1991). Sharp-tailed grouse place nests near or under shrub or tree cover; nests consist of a shallow scrape lined with nearby plant material (Baicich and Harrison 1997). Eggs are sub-elliptical to oval, smooth, slightly to moderately glossy, and fawn, tawny, or olive brown in color, with most marked with small, well-defined spots of reddish brown and lavender (Baicich and Harrison 1997, Connelly et al. 1998). Clutch size is usually 10-13 eggs; incubation is done by the female alone and lasts 23-24 days beginning with the last egg (Baicich and Harrison 1997). Using harvested Michigan specimens, Ammann (1957) estimated that 69% of the sharp-tailed grouse examined hatched during June 6-17. Young are precocial and downy and able to feed themselves and leave nest to follow the female, which broods the chicks alone (Connelly et al. 1998). Baicich and Harrison (1997) note that young can make short flights by 10 days and become increasingly independent during the period from 10 days to about 6-8 weeks when the broods disperse. Sharp-tailed grouse feed on a variety of plants and insects (see Connelly et al. 1998 for detailed summary of food habit literature). In spring and summer, herbaceous material, fruits, and flowers of grasses and forbs are eaten, as well as insects, such as ants, moths, crickets, grasshoppers, and beetles (Connelly et al. 1998). Jones (1966) found that green leaves, especially those of grasses, were the dominant food item in spring and summer in eastern Washington. An array of buds, seeds, fruits, and herbaceous matter are selected by sharp-tailed grouse in fall and winter. In Minnesota during fall, Harris (1967) found 55.2% of the total food volume in sharp-tailed grouse crops consisted of seeds and seed heads of agricultural grains, including oats, wheat, and flax. Clover (*Trifolium* spp.) accounted for 13.3% and grasshoppers 14.7% of the total volume, while wild seeds made up 11.4% and buds and catkins 2.4% of the total. Clover leaves were the most important food item in crops of sharp-tailed grouse collected in fall on Drummond Island (Ammann 1957). Birds collected in fall by Ammann (1957) near Seney fed primarily on the leaves of sheep-sorrel (*Rumex acetosella*, 29% by volume) and clover (13 %), but also consumed grasshoppers and the leaves, seeds, buds, needles, and fruits of several other plant species. Ammann (1957) stated that preferred sharp-tailed grouse winter foods were the twigs, buds, and catkins of paper birch (*Betula papyrifera*), aspen (*Populus* spp.), serviceberry (*Amelanchier* spp.), hazelnut (*Corylus* spp.), and bog birch (*Betula pumila*), and the fruits of mountain ash (*Sorbus americana*), hawthorn (*Crataegus* spp.), sumac (*Rhus* spp.), common juniper (*Juniperus communis*), rose (*Rosa* spp.), and black chokeberry (*Pyrus melanocarpa*). Sharp-tailed grouse generally forage on the ground during spring, summer, and fall, but will feed in shrubs and trees during winter (Connelly et al. 1998 and sources therein).

Conservation/Management: Ammann (1957, 1963) attributed population declines in the late 1950's to habitat loss and recognized habitat conversion due to natural and artificial reforestation as the most urgent threat facing Michigan's sharp-tailed grouse population. He believed the only way to maintain the population over the long-term was to identify and manage large units of public land as suitable habitat. Ammann (1963) predicted that sharp-tailed grouse in Michigan would likely be restricted to a few productive and intensively

managed areas and recognized that management would be costly and possibly difficult to justify over the long-term given the benefits observed. Ammann (1957) estimated the total Michigan sharp-tailed grouse population in 1951 at approximately 4,350 birds (Upper Peninsula 3,900 birds, Lower Peninsula 450 birds). Declines in Michigan have continued since that time with further reforestation. Using unpublished Michigan Department of Natural Resources survey data, Maples and Soulliere (1996) stated the total population "may be just over 1,000." Although sharp-tailed grouse is classified as a game bird and was previously hunted in Michigan, hunting is currently not allowed due to the small population size.

Active management to expand the amount of suitable habitat near remaining populations could increase numbers of sharp-tailed grouse. An array of methods have been used to control forest and shrub encroachment, such as logging, brush mowing, managed grazing, plowing, prescribed burning, and herbicide application. Ammann (1963) felt herbicide spraying or a combination of herbicide application and prescribed burning were the most practical means of controlling woody cover encroachment on public lands. Although herbicide spraying was more costly than burning, Ammann (1963) found that it was more practical and produced predictable results because success was less dependent on weather and respraying was feasible whenever necessary, which sometimes made the technique more cost effective overall. Aerial spraying allows treatment of large areas, but is less selective and can result in the killing of desirable species that are more susceptible to herbicide than target species (Ammann 1963). Ammann (1957) found that only about one third of all burns were effective at controlling woody vegetation; however, he still believed the method had merit and should continue. He observed the best results with frequent burns at three- and five-year intervals. Although prescribed burns are typically avoided in late summer due to hazardous weather conditions and were not conducted in his studies, Ammann (1957) believed the intensity produced would likely be more effective than spring and fall burns at limiting woody plant sprouting. Planting to produce food or cover and supplemental winter feeding were deemed impractical in most situations and at a large scale (Ammann 1957). Maples and Soulliere (1996) recommended strategic multiple-purpose planning instead of the intensive management (e.g. mechanical or herbicide treatment) traditionally done for sharp-tailed grouse. They suggested the following actions in areas near existing openings: expanding open areas through commercial timber sales on public and private lands, restoring hydrology to drained wet meadows that have converted to forest, and acquiring key parcels of private land that are highly suited to prairie wildlife (Maples and Soulliere 1996). The Michigan Department of Natural Resources has recently developed a GIS habitat model for the sharp-tailed grouse that could be used to predict where suitable habitat exists and target management actions (M. Donovan pers. comm.). To conserve sharp-tailed grouse in the Great Lakes region, Berg (1990) stressed the education of resource managers and the public about the species' habitat requirements, importance of having open lands of various sizes, and use of landowner incentives to provide food and cover. Financial incentives could be used to encourage landowners to maintain grasslands and limit woody encroachment, which would benefit sharp-tailed grouse and other bird species that use grasslands and savannas (Reilly 1991). Reilly (1991) suggested that the creation of a corridor of suitable habitat from the eastern to western Upper Peninsula would benefit the species by maintaining genetic diversity and providing population reservoirs.

Research needs: Monitoring of population status in Michigan should continue, especially at known leks. Biologists should also assess changes to the vegetation and potential threats during monitoring efforts. Connelly et al. (1998) identify an immediate need for baseline data on sharp-tailed grouse in the northern parts of its range given large-scale declines. They specifically note that management strategies need to be identified to stabilize and increase populations. More research is needed to evaluate the effects of harvesting on populations throughout its range and the genetic relationships among sharp-tailed grouse at the same and different leks to increase knowledge of the species' mating system and population structure (Connelly et al. 1998).

Related abstracts: short-eared owl, pine barrens, dry sand prairie, northern wet-mesic prairie, and northern shrub thicket.

Selected references:

Ammann, G.A. 1957. The prairie grouse of Michigan. Michigan Department of Conservation Technical Bulletin, Lansing, MI.

_____. 1963. Status and management of sharp-tailed grouse in Michigan. Journal of Wildlife Management 27:802-809.

Baicich, P.J., and C.J.O. Harrison. 1997. A guide to the nests, eggs, and nestlings of North American birds. Second Edition. Natural World, Academic Press, San Diego, CA.

Barrows, W.B. 1912. Michigan bird life. Michigan Agricultural Experiment Station Bulletin No.94. East Lansing, MI.

Berg, W.E. 1990. Sharp-tailed grouse management problems in the Great Lakes States: does the sharptail have a future? Loon 62:42-45.

Connelly, J.W., M.W. Gratson, and K.P. Reese. 1998. Sharp-tailed grouse (*Tympanuchus phasianellus*). In The Birds of North America, No. 354 (A. Poole and F. Gill, eds.). The Birds of North America, Inc., Philadelphia, PA.

Emlen, S.T., and L.W. Oring. 1977. Ecology, sexual selection, and the evolution of mating systems. Science 197:215-223.

Harris, S.W. 1967. Fall foods of sharp-tailed grouse in Minnesota. Journal of Wildlife Management 31:585-587.

Jones, R.E. 1966. Spring, summer, and fall foods of the Columbian sharp-tailed grouse in eastern Washington. Condor 68:536-540.

Maples, T.E., and G.J. Soulliere. 1996. Status of Michigan sharp-tailed grouse in the 1990's. Michigan Department of Natural Resources, Wildlife Division Report No. 3256.

Reilly, R.E. 1991. Species account for sharp-tailed grouse (*Tympanuchus phasianellus*). Pages 186-187 *In* The Atlas of Breeding Birds in Michigan. Brewer, R., G. A. McPeek, and R.J. Adams, Jr. (eds). 1991. Michigan State University Press, East Lansing, MI.

Wood, N.A. 1951. The Birds of Michigan. University of Michigan, Museum of Zoology Miscellaneous Publication No. 75.

Abstract citation:

Monfils, M.J. 2007. Special animal abstract for *Tympanuchus phasianellus* (sharp-tailed grouse). Michigan Natural Features Inventory, Lansing, MI. 5 pp.

Funding provided by the Michigan Department of Transportation.