

# NATURAL HISTORY

## SURVEY REPORTS

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### Upland Sandpipers on Illinois Prairie-Chicken Sanctuaries

Grasslands on the prairie-chicken (*Tympanuchus cupido*) sanctuaries in Jasper and Marion counties are used by a wide array of Illinois wildlife. Upland sandpipers (*Bartramia longicauda*) constitute one of the most interesting and graceful harbingers of spring in sanctuary meadows. Like the prairie-chicken, the upland sandpiper is an endangered species in Illinois. Results of a national survey in the 1970's showed that sandpipers were not known to be increasing anywhere because of continued degradation of grassland habitat.

Survey wildlife ecologists John Buhnerkempe and Ronald Westemeier analyzed available data on upland sandpipers breeding on the sanctuaries between 1963 and 1984 for a 1988 article in the Transactions of the Illinois Academy of Science. The average arrival date in Jasper County of upland sandpipers that presumably wintered in Argentina was April 10. Nest initiation typically began about 2 weeks later. Censuses showed 7-8 breeding pairs in 1983-1984 and again in 1988 — about one pair per 40.5 ha (100 acres) of grassland.

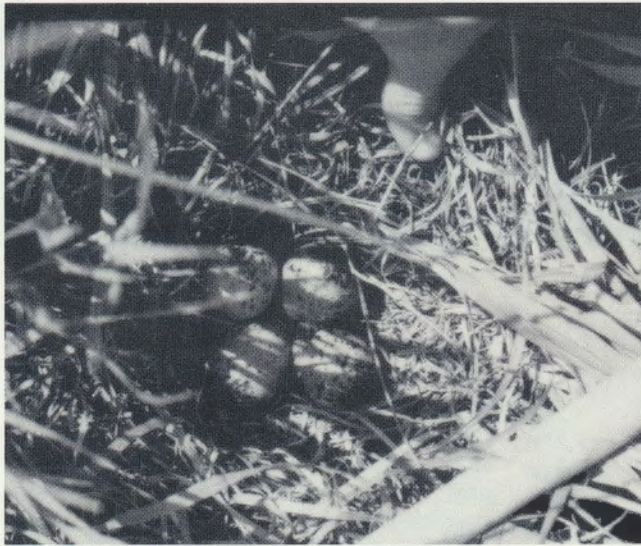
Only 33 sandpiper nests were found while searching 2,940 ha (7,265 acres) over the 22-year study; 12 additional nests were found since the published study. Of 34 nests whose fates were known (each with 4 eggs), 21 hatched (62 percent), 11 were destroyed by mammalian predators, and 2 were abandoned.

Sandpipers made selections from an array of cover types, management practices, age classes, and cover heights available on the sanctuaries. Redtop (*Agrostis alba*)-timothy (*Phleum pratense*) meadows

predominated on the sanctuaries and use by nesting sandpipers was proportionate to availability of these types; however, selection was shown for mixed grasses and forbs — those in which no plant species was clearly dominant. Fields of uniform grasses and legumes, those most suitable for grass seed harvesting, were avoided. Unfortunately, combine harvesting of redtop-timothy seed by tenants is the primary approach to maintaining nest cover for prairie-chickens. Upland sandpipers chose grassy stands that had been high mowed for weed control or burned the previous summer or fall. Sandpipers nested in all age classes of grass-forby cover, but nest



The upland sandpiper as it appears on the prairie-chicken sanctuaries in Jasper and Marion counties (photo by Bob Short).



A sandpiper nest photographed on the Marshall Field III prairie-chicken sanctuary (photo by Ronald L. Westemeier).



densities were highest in sods that were in at least the ninth season of growth since seeding.

Forbs occurring at least 5 percent of the time at nest sites included goldenrod (*Solidago* spp.), aster (*Aster* spp.), ragweed (*Ambrosia* spp.), and yarrow (*Achillia millefolium*). Grasses with at least a 5 percent frequency of occurrence were those of medium height and narrow leaves such as redtop, timothy, brome (*Bromus* spp.) and bluegrass (*Poa* spp.). Tall, rank prairie grasses (*Andropogon gerardi*, *Sorghastrum nutans*, and *Panicum virgatum*) did not occur at nest sites, although stands containing these grasses amounted to 15 percent of the area searched. Similarly, on Goose Lake Prairie, Illinois' most extensive area of native mesic tallgrass prairie, upland sandpipers limited nesting to patches of bluegrass.

Upland sandpipers on the Jasper County sanctuaries nested in vegetation 17-33 cm (6.7-13.0 inches) in height, such as old redtop-timothy meadows rotary mowed for weed control the previous summer. The single nest found in a field of prairie grass was in a field that had been burned the preceding winter and the new growth was still short when the nest was initiated. Thus, freedom of vision and movement are clearly important attributes of sandpiper nesting habitat. These attributes, plus insect abundance, are also important for breeding

sandpipers. Although quality habitat for sandpipers is not prime for nesting prairie-chickens, patches suitable for sandpipers help diversify the vegetative complex on sanctuaries and may contribute importantly to brooding areas for prairie-chickens.

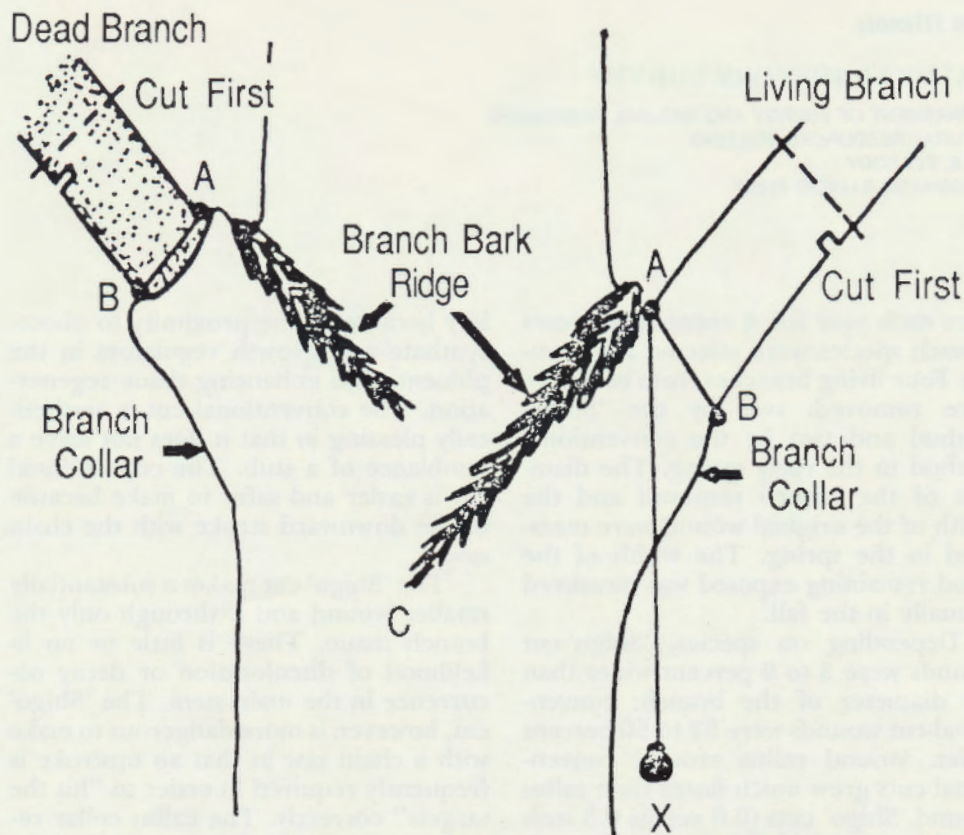
Management strategies designed to benefit upland sandpipers include the use of cool-season introduced grasses that are allowed to reach 10-12 years of age before reseeding, in order to diversify. Management of such fields may include a 3-year rotation of rotary mowing to a height of 15-30 cm, no disturbance, and prescribed burning. Moderate grazing of grasses would also provide suitable nesting and brooding cover, but further research on grazing, particularly of prairie grasses, under Illinois conditions is needed. Delayed mowing (at least to after July 1) of likely sandpiper nest-brood habitat, if necessary, would help to avoid losses of eggs and young. Such measures should continue to maintain or increase sandpiper numbers on the sanctuaries. On private farmland, the current Federal programs of cropland diversion to grassland, such as the Conservation Reserve Program, may give this beautiful prairie bird a much-needed assist.

By Ronald L. Westemeier, Section of Wildlife Research

#### Pruning Cuts i

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### Pruning Cuts in Trees

The invention of the chain saw made removing branches from trees much easier. However, Dr. Alex Shigo and colleagues are now telling arborists and homeowners that they are making the pruning cut in the wrong place and describe natural target pruning (U.S. Forest Service Information Folder NE-INF-58-84). In natural target pruning the objective is to leave the branch collar on the primary stem while removing the remainder of the branch. This frequently requires the final cut to be at approximately the same angle from the vertical as that formed by the branch bark ridge. This method leaves a smaller area of exposed wood, retains the branch collar, and requires an upstroke with the chain saw when the angle between the trunk and branch is acute.

With conventional pruning, the final cut with the chain saw is a downstroke with the chain saw. It is not a flush cut. It begins outside the branch bark ridge (point A in Figure 1) and proceeds

slightly outward (from point A to approximately the point of the arrow identifying the branch collar). Care is taken not to injure with the chain saw the main stem above the branch. In removing a dead branch with a callus collar, much of the callus tissue would be removed to avoid leaving a projection (stub) on the trunk. The conventional cut creates a larger wound than the 'Shigo' cut. Closure of the wound depends on the rate of development of callus tissue around the wound margin. One 4-year study in the Illinois Natural History Survey arboretum had as its objective the comparison of wound-closure time following natural target and conventional pruning of living branches from three species of trees.

The trees used in the study were pin oak, Norway maple and sycamore, and were planted 12 feet apart in 100-tree blocks. The trees had trunk diameters of 4 to 7 inches when the test began in 1983. The branches removed had diameters of 1 to 1.5 inches. Ten different

## *The Illinois*

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DEPARTMENT OF ENERGY AND NATURAL RESOURCES  
NATURAL RESOURCES BUILDING  
607 E. PEABODY  
CHAMPAIGN, ILLINOIS 61820

trees each year for 4 consecutive years of each species were selected for pruning. Four living branches from each tree were removed: two by the 'Shigo' method and two by the conventional method in the early spring. The diameter of the branch removed and the width of the original wound were measured in the spring. The width of the wood remaining exposed was measured annually in the fall.

Depending on species, 'Shigo'-cut wounds were 3 to 6 percent wider than the diameter of the branch; conventional-cut wounds were 32 to 50 percent wider. Wound callus around conventional cuts grew much faster than callus around 'Shigo' cuts (0.6 versus 0.3 inch the first year and 0.8 versus 0.5 inch the second year). After one growing season the amount of wood exposed on conventional and 'Shigo' branch wounds was approximately equal, even though the conventional cuts were originally much larger. After the second growing season, more conventional than 'Shigo' cuts were fully closed.

The conventional and 'Shigo' cuts each have advantages and disadvantages. The conventional cut makes a larger wound and subjects the interior wood in the tree to the greater likelihood of discoloration and decay. Discoloration is assured, and decay may or may not occur. The conventional cut closes rap-

idly because of the proximity to photosynthate and growth regulators in the phloem, thus enhancing tissue regeneration. The conventional cut is aesthetically pleasing in that it does not leave a semblance of a stub. The conventional cut is easier and safer to make because of the downward stroke with the chain saw.

The 'Shigo' cut makes a substantially smaller wound and is through only the branch tissue. There is little or no likelihood of discoloration or decay occurrence in the main stem. The 'Shigo' cut, however, is more dangerous to make with a chain saw in that an upstroke is frequently required in order to "hit the targets" correctly. The callus collar remaining on the main stem is also not aesthetically pleasing to some tree owners.

Since there are advantages and disadvantages to each method of pruning, the question that remains to be answered by arborists and homeowners is, which is the more serious: (1) the discoloration, possible decay and internal defects that may occur following use of the conventional pruning method, or (2) the aesthetic displeasure of humans and the slow closure of wounds on trees resulting from the natural pruning method?

*By Dan Neely, Section of Botany and Plant Pathology*

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