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Concentrations of American Alligator Populations in Arkansas

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In the early 1800's the American Alligator (*Alligator mississippiensis*) population was estimated at three million for the United States (Woodward and Marion, 1978). However, by the early part of the 20th century, increased land conversion to agriculture and commercial exploitation caused alligator numbers to plummet (McIlhenny, 1935). The Arkansas Game and Fish Commission (AGFC) enacted a regulation to protect the alligator in 1961. In 1967 the American Alligator was listed as an endangered species throughout its range (U.S. Fish and Wildlife Service, 1967). At that time the alligator population was estimated to be only in the thousands (Woodward and Marion, 1978). Concern over the fate of the alligator stimulated strong interest in its conservation and biology. In January 1977 it was down listed to Threatened status. In 1987 the U.S. Fish and Wildlife Service removed the American Alligator from the endangered species list and announced the animal as fully recovered throughout its range.

The American Alligator is seen as a classic success story of the Endangered Species Act. Currently, the American Alligator is listed as "Threatened due to similarity of appearance" by the U.S. Fish and Wildlife Service and is listed as Endangered by the Arkansas Game and Fish Commission. This listing ensures control of legal trade of alligator hides and products.

According to a questionnaire mailed to state wildlife agencies in 1973, alligators were reported to be present in Hempstead, Miller, and Lafayette counties in Arkansas (Fig. 1). Within these three counties, it was estimated that an increasing population of 1,900 individuals inhabited 30.4 sq km of suitable habitat (Chabreck, 1973). A restocking effort was undertaken by the Arkansas Game and Fish Commission from 1972 to 1984. Approximately 2,800 alligators were released throughout the state in areas within its presumed historic range. About 80% of the alligators were stocked on private lands at the request of landowners. Alligators were initially taken from Grassy Lake, in Sevier County, Arkansas, but the majority was transplanted from Rockefeller and Sabine National Wildlife Refuges in Louisiana (Swaffar, 1995). Since the restocking effort, little information has been obtained concerning alligator populations in Arkansas. Growing evidence, such as increased sightings and interactions with humans, suggests that populations throughout Arkansas are increasing.

However, little empirical data exist to support this claim. To date, no published information concerning alligator populations or habitats is available for Arkansas.

In order to determine the current distribution of alligators within Arkansas, a telephone survey of AGFC personnel was incorporated in a geographical information system (GIS). Personnel from AGFC district offices and 24 AGFC wildlife officers were questioned about the occurrence of alligators in their respective areas. Responses typically provided information on known populations of alligators and also information about particular nuisance alligators. Potential alligator habitat identified in the Arkansas GAP project final report (USGS, 1998) was also included in the GIS. Additionally, ongoing research conducted by the authors, through the Arkansas Forest Resources Center (AFRC), provided information on several localities.

Information on potential habitat and alligator distributions from the Arkansas GAP project, the survey of AGFC personnel, and the authors' ongoing research were layered onto a county level map of Arkansas using ArcView 3.1. Layered data were then used to help identify areas, based on the combination of potential habitat and known localities, within the state that may have the highest concentrations of alligators. These areas were then delineated using heads-up digitizing in ArcView 3.1.

The Arkansas GAP data indicates that potential alligator habitat within Arkansas occurs largely in the Gulf Coastal Plain and Delta regions of the state (Fig. 2). Most of the habitat follows river and stream drainages such as the Arkansas, White, Ouachita, Saline, Red, and Sulphur rivers and Bartholomew and Dorcheat Bayous. In addition, Millwood Lake, Grassy Lake, Lake Columbia and several other smaller lakes were also identified as containing alligators. Using information from the telephone surveys, a total of nine state wildlife management areas (WMA), three national wildlife refuges, three state parks, and one national memorial within Arkansas were identified as having alligator populations (Fig. 3). In addition to locations within protected areas such as WMA's, state parks, and national wildlife refuges, other specific alligator locations were also identified by AGFC personnel. Many localities occur on privately owned land or lakes within the state (Fig. 4). GIS analysis of the available data suggest five areas as potentially

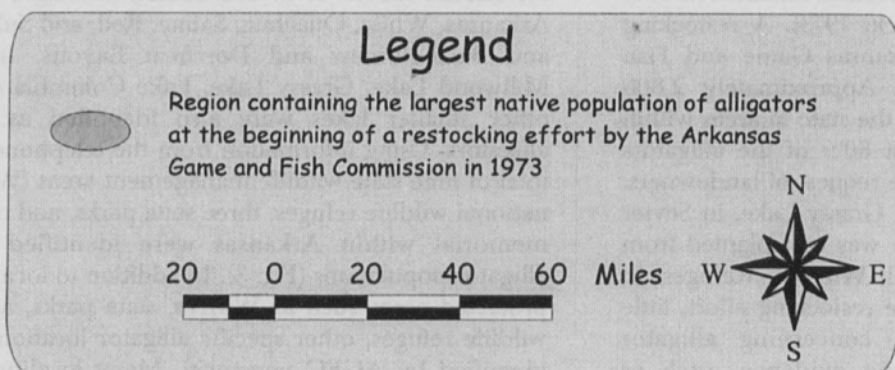
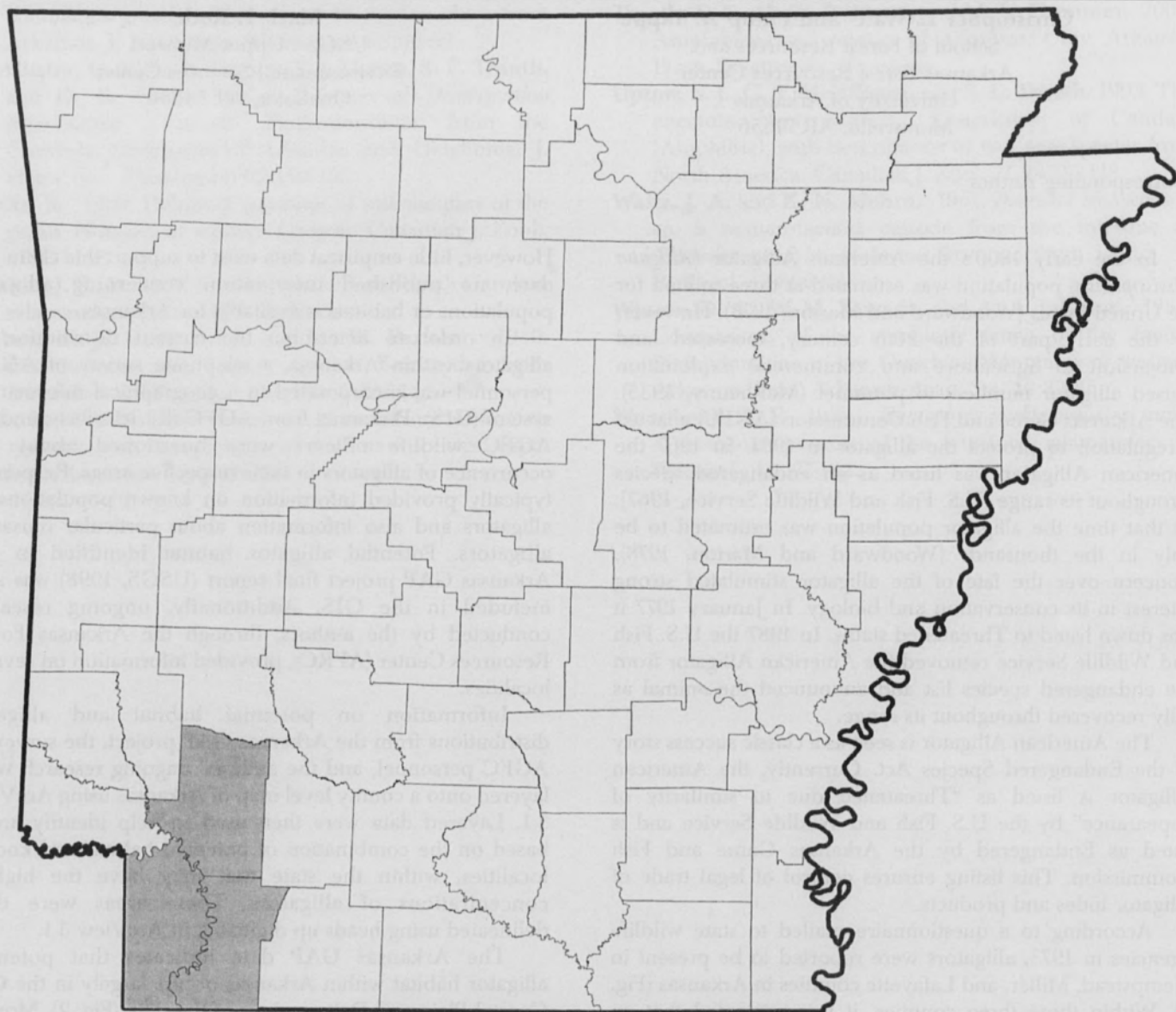


Fig. 1. Region containing the largest native population of alligators at the beginning of a restocking effort by the Arkansas Game and Fish Commission in 1973.

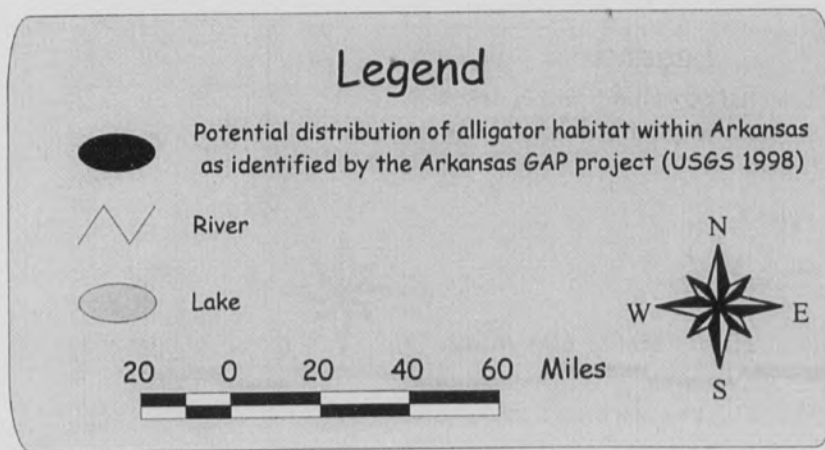
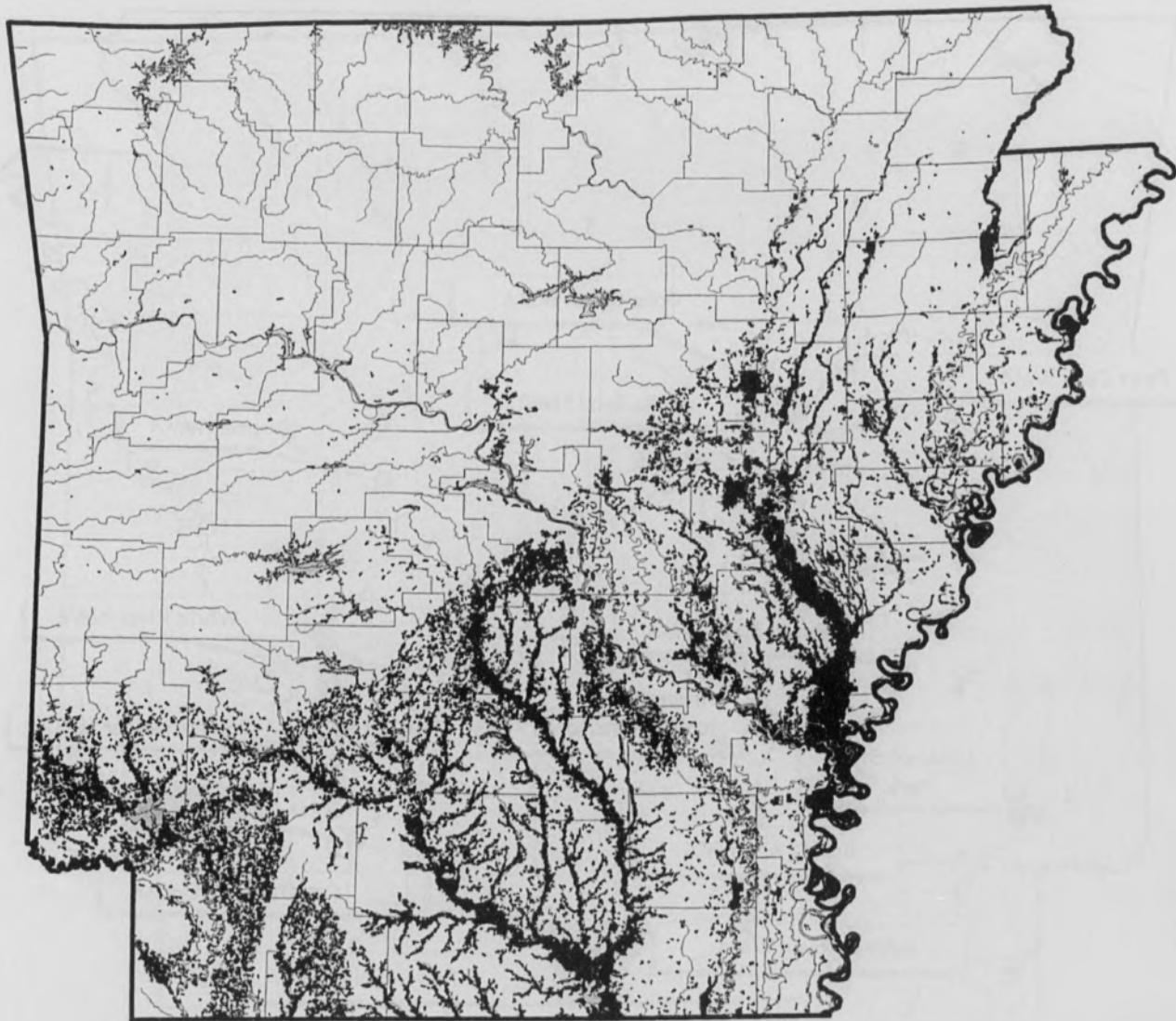


Fig. 2. Potential distribution of alligator habitat within Arkansas as identified by the Arkansas GAP project (USGS 1998).

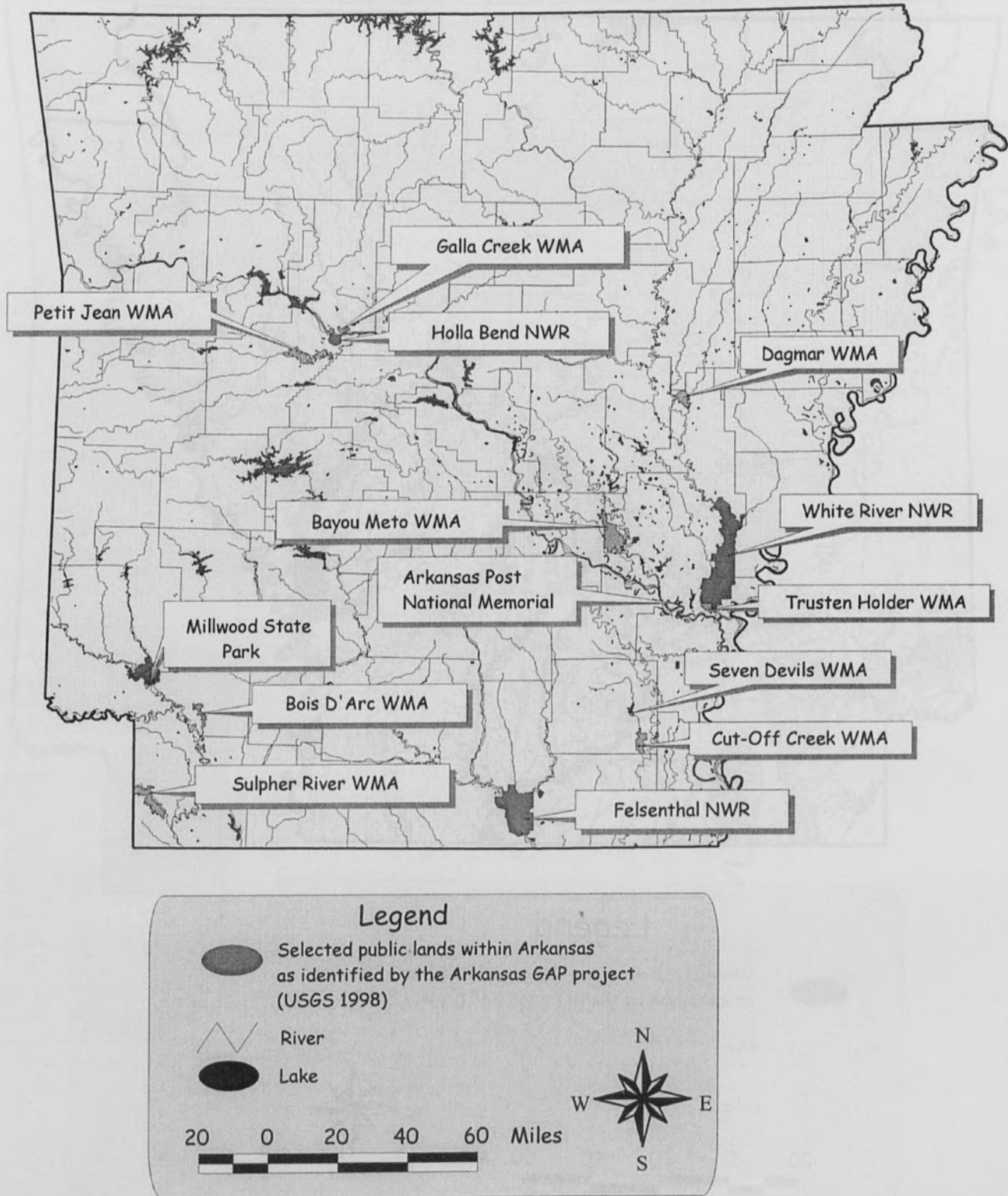


Fig. 3. Selected public lands within Arkansas with reported locations of alligators or alligator populations.

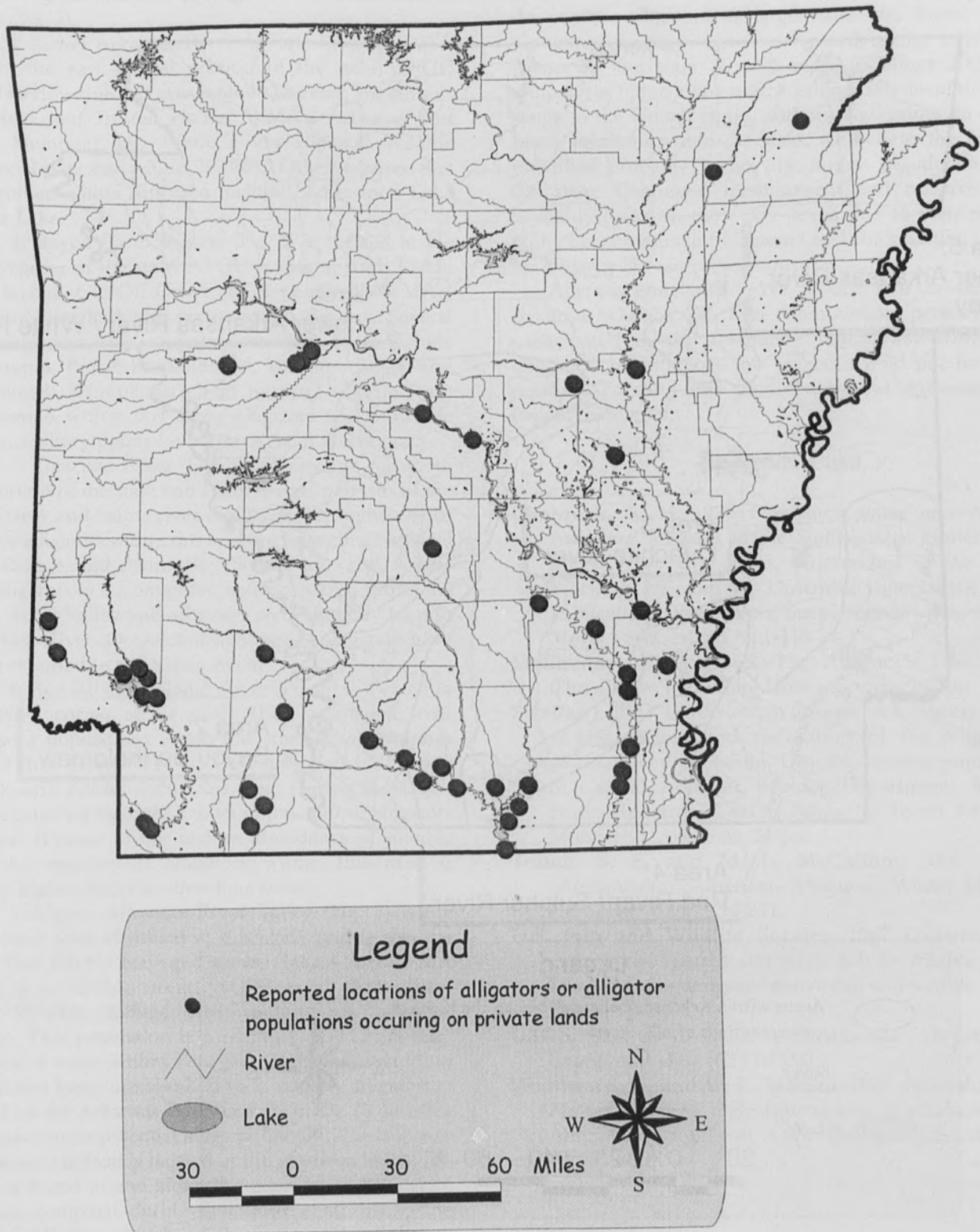


Fig. 4. Reported locations of alligators or alligator populations occurring on private lands within Arkansas.

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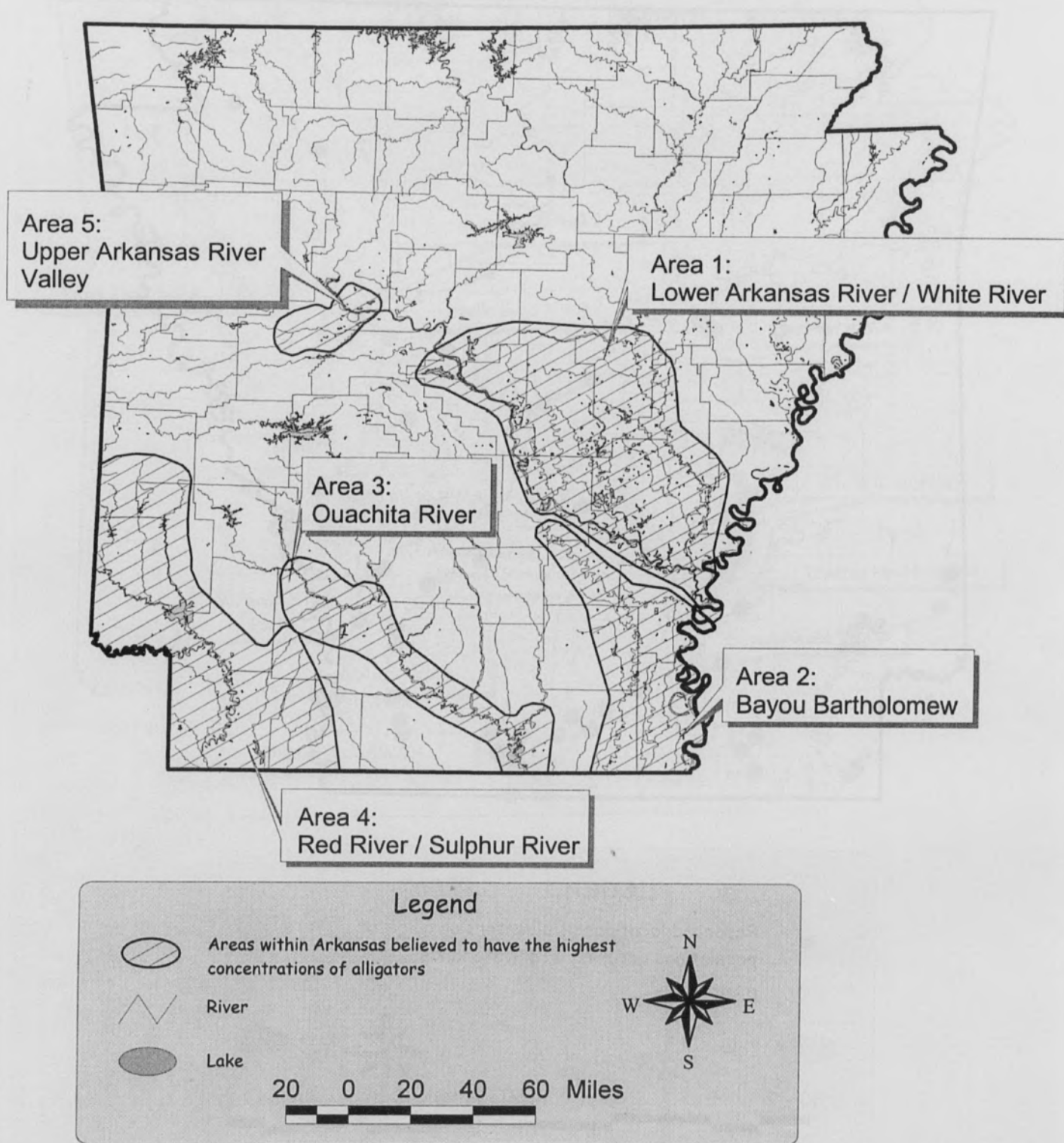


Fig. 5. Areas within Arkansas believed to have the highest concentrations of alligators.

having the highest numbers of alligators within the state of Arkansas (Fig. 5).

Area 1: Lower Arkansas River / White River (Fig. 5) is located in the east central portion of the state. AFGC managed lands within this area include Dagmar, Wattensaw, Bayou Meto, and Trusten Holder WMA's. Arkansas Post National Memorial and White River National Wildlife Refuge are also located within this area. Other locations that were identified within this area include Peckerwood Lake and Clear Lake.

Area 2: Bayou Bartholomew (Fig. 5) is located in the southeast corner of the state. AFGC managed lands within this area include Cut-Off Creek and Seven Devils WMA's. Lake Chicot State Park also occurs within this area. Several other alligator locations were also identified. These include Lake Grampus, Bayou Bartholomew, McCones Brake, and Perkins Slough. Complaints about nuisance alligators are fairly common within this area. Alligators are known to invade aquaculture ponds found throughout this region.

Area 3: Ouachita River (Fig. 5) is located in the south central portion of the state and encompasses portions of the Ouachita river and Saline river drainages. The public lands that harbor alligators within this area are Felsenthal National Wildlife Refuge and Moro Bay State Park. The AGFC stocked alligators in the extensive wetland system within the Ouachita River Valley and alligators are frequently seen in the Ouachita River. Occasional sightings of alligators have also been reported in the Saline River.

Area 4: Red River / Sulphur River (Fig. 5) is located in the southwest corner of the state. AGFC managed areas with alligator populations within this area include Sulphur River and Bois D'Arc WMA's. One state park, Millwood State park, also occurs within this area. During the 1970's this area contained the only known population of alligators in the state. Because of this and an abundance of suitable habitat, the number of alligators within this area is potentially higher than the other four areas.

Area 5: Upper Arkansas River Valley (Fig. 5) is the northern most area identified in this study and is also the smallest. Two AGFC managed areas, Galla Creek WMA and Petit Jean WMA, occur in this area. Holla Bend National Wildlife Refuge also contains an alligator population. This population is a result of AGFC stocking. Two bodies of water within Petit Jean WMA, Pullen Pond and Kingfisher Lake, are also known to contain alligators.

Based on the Arkansas GAP data, 47 of the 75 counties in Arkansas contain potential alligator habitat. The majority of this potential habitat is located in the southern half of the state and is found in and along the major river drainages. Information compiled during this study conforms to the Arkansas GAP data. Much of the existing land that is considered to be alligator habitat is located on public land. The majority of these areas are WMA's that are controlled

by AGFC. There are many other areas within the state that do contain alligators. A large male was found dead in Craighead County, which is located in the northeastern corner of the state (Trauth and McCallum 2001). This animal was found at the northwestern extreme of the species range in the United States. Although alligators do occur in many localities within the state, we believe the five areas identified probably harbor the largest populations within the state. Continued management and research should probably focus on these five areas due to their relatively high concentrations of alligators and the resulting potential for alligator-human interactions.

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