

Conservation Biology Research Grants Program
Division of Ecological Services
Minnesota Department of Natural Resources

DISTRIBUTION OF FISH SPECIES WITHIN TEN WATERSHEDS IN
SOUTHEASTERN MINNESOTA

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June 1994

Abstract

Fish species distribution patterns and watershed fish species lists were generated by sampling fishes at 50 sites within 10 watersheds in southeastern Minnesota during 1992 and 1993. Twenty-seven species of fishes were collected, with brown trout being the most widespread. The number of species collected per watershed ranged from 0 (Homer Creek) to 21 (Whitewater River), with species number apparently related to watershed size and sampling effort. Species distribution maps and watershed species lists generated by this project are conservative, as they include only those species encountered during this project.

Introduction

During a project to develop an Index of Biotic Integrity for coldwater streams in and near Winona County, Minnesota, fish were sampled from 50 stream sites within 10 different watersheds draining separately into the Mississippi River. Because the current distributions of many fishes in this region, especially nongame species, were poorly known, fish collection records were used to develop species distribution maps for the watersheds as well as individual species lists for each watershed.

Methods

Fish collection sites were distributed among 10 different watersheds within Winona, Olmsted, and Wabasha counties in southeastern Minnesota. The 10 watersheds examined were East Indian Creek watershed, Whitewater River watershed, Latsch State Park unnamed creek watershed, Garvin Brook Watershed, Gilmore Creek watershed, Burns Valley Creek watershed, Pleasant Valley Creek watershed, Homer Creek watershed, Cedar Creek watershed, and Big Trout Creek watershed.

At each of the 50 stream sites sampled during the summers of 1992 and 1993, fish were collected with the aid of a Smith-Root Type VII backpack electrofisher. At each location, a 150-m section of stream was electrofished beginning at the downstream end and working upstream. All fish collected were identified, counted, and returned to the stream alive. To verify field identifications, voucher specimens of each species (except trout) collected at each site were preserved in 10% formalin and reexamined in the laboratory.

Results and Discussion

Twenty-seven species of fishes were collected within the 10 watersheds (Table 1). Individuals representing 10 different fish families were present within the study area. The families Cyprinidae and Percidae were the best represented, with eight and five species, respectively.

Distributions of each of the species collected within the watersheds are shown in Figures 1-27. Brown trout was the most widespread species, being present at 36 of the 50 sites (Fig. 16). Only five additional species (blacknose dace - Fig. 7, longnose dace - Fig. 8, creek chub - Fig. 9, white sucker - Fig. 10,

johnny darter - Fig. 24) were collected at 20 or more sites. Six species (bigmouth shiner - Fig. 4, yellow bullhead - Fig. 12, tadpole madtom - Fig. 13, rainbow trout - Fig. 15, mud darter - Fig. 21, logperch - Fig. 25) were located at only a single site each. Only one state listed species, the American brook lamprey, was collected during this study; it occurred in two different watersheds at a total of three sites (Fig. 1).

Individual species lists for nine of the 10 watersheds are presented in Tables 2-10. No fish were collected at the single site examined within Homer Creek. This stream contained amphipods, but no fish were observed within the study reach. In the remaining watersheds, the number of fish species collected ranged from a high of 21 in the Whitewater River watershed (Table 3) to a low of two species each in the Latsch State Park unnamed creek (Table 4) and Gilmore Creek (Table 6) watersheds.

The species distribution maps and the watershed species lists Included in this report should be considered as very conservative estimates of the fish species' distributions within these watersheds, as only collections made at the 50 sites were used to produce the maps and lists. The true distributions of the various fish species within these watersheds can only be determined by more extensive sampling, and by review of all other possible sources of information (collection records of the Minnesota Department of Natural Resources Fisheries office in Lake City, and the personal records of individuals such as Konrad Schmidt).

Table 1. Fish species collected from the 10 study watersheds during 1992 and 1993.

<u>Family / Common name</u>	<u>Scientific name</u>
Petromyzontidae	
American brook lamprey	<i>Lampetra appendix</i>
Cyprinidae	
central stoneroller	<i>Campostoma anomalum</i>
common shiner	<i>Luxilus cornutus</i>
bigmouth shiner	<i>Notropis dorsalis</i>
southern redbelly dace	<i>Phoxinus erythrogaster</i>
bluntnose minnow	<i>Pimephales notatus</i>
blacknose dace	<i>Rhinichthys atratulus</i>
longnose dace	<i>Rhinichthys cataractae</i>
creek chub	<i>Semotilus atromaculatus</i>
Catostomidae	
white sucker	<i>Catostomus commersoni</i>
Ictaluridae	
black bullhead	<i>Ameiurus melas</i>
yellow bullhead	<i>Ameiurus natalis</i>
tadpole madtom	<i>Noturus gyrinus</i>
Umbridae	
central mudminnow	<i>Umbra limi</i>
Salmonidae	
rainbow trout	<i>Oncorhynchus mykiss</i>
brown trout	<i>Salmo trutta</i>
brook trout	<i>Salvelinus fontinalis</i>
Gasterosteidae	
brook stickleback	<i>Culaea inconstans</i>
Cottidae	
mottled sculpin	<i>Cottus bairdi</i>
slimy sculpin	<i>Cottus cognatus</i>
Centrarchidae	
green sunfish	<i>Lepomis cyanellus</i>
bluegill	<i>Lepomis macrochirus</i>
Percidae	
mud darter	<i>Etheostoma asprigene</i>
rainbow darter	<i>Etheostoma caeruleum</i>
fantail darter	<i>Etheostoma flabellare</i>
johnny darter	<i>Etheostoma nigrum</i>
logperch	<i>Percina caprodes</i>

Table 2. Fish species collected from East Indian Creek watershed (one sample site) during 1992 and 1993.

<u>Family / Common name</u>	<u>Scientific name</u>
Cyprinidae	
blacknose dace	<i>Rhinichthys atratulus</i>
longnose dace	<i>Rhinichthys cataractae</i>
creek chub	<i>Semotilus atromaculatus</i>
Catostomidae	
white sucker	<i>Catostomus commersoni</i>
Salmonidae	
brown trout	<i>Salmo trutta</i>
brook trout	<i>Salvelinus fontinalis</i>
Gasterosteidae	
brook stickleback	<i>Culaea inconstans</i>

Table 3. Fish species collected from the Whitewater River watershed (18 sample sites) during 1992 and 1993.

<u>Family/ Common name</u>	<u>Scientific name</u>
Petromyzontidae	
American brook lamprey	<i>Lampetra appendix</i>
Cyprinidae	
central stoneroller	<i>Campostoma anomalum</i>
common shiner	<i>Luxilus cornutus</i>
bigmouth shiner	<i>Notropis dorsalis</i>
southern redbelly dace	<i>Phoxinus erythrogaster</i>
bluntnose minnow	<i>Pimephales notatus</i>
blacknose dace	<i>Rhinichthys atratulus</i>
longnose dace	<i>Rhinichthys cataractae</i>
creek chub	<i>Semotilus atromaculatus</i>
Catostomidae	
white sucker	<i>Catostomus commersoni</i>
Umbridae	
central mudminnow	<i>Umbra limi</i>
Salmonidae	
rainbow trout	<i>Oncorhynchus mykiss</i>
brown trout	<i>Salmo trutta</i>
brook trout	<i>Salvelinus fontinalis</i>
Gasterosteidae	
brook stickleback	<i>Culaea inconstans</i>
Cottidae	
mottled sculpin	<i>Cottus bairdi</i>
slimy sculpin	<i>Cottus cognatus</i>
Centrarchidae	
green sunfish	<i>Lepomis cyanellus</i>
Percidae	
rainbow darter	<i>Etheostoma caeruleum</i>
fantail darter	<i>Etheostoma flabellare</i>
johnny darter	<i>Etheostoma nigrum</i>

Table 4. Fish species collected from the Latsch State Park unnamed creek watershed (one site) during 1992 and 1993.

<u>Family / Common name</u>	<u>Scientific name</u>
Cyprinidae	
creek chub	<i>Semotilus atromaculatus</i>
Umbridae	
central mudminnow	<i>Umbra limi</i>

Table 5. Fish species collected from Garvin Brook watershed (12 sites) during 1992 and 1993.

<u>Family / Common name</u>	<u>Scientific name</u>
Petromyzontidae	
American brook lamprey	<i>Lampetra appendix</i>
Cyprinidae	
blacknose dace	<i>Rhinichthys atratulus</i>
longnose dace	<i>Rhinichthys cataractae</i>
creek chub	<i>Semotilus atromaculatus</i>
Catostomidae	
white sucker	<i>Catostomus commersoni</i>
Salmonidae	
brown trout	<i>Salmo trutta</i>
brook trout	<i>Salvelinus fontinalis</i>
Gasterosteidae	
brook stickleback	<i>Culaea inconstans</i>
Cottidae	
slimy sculpin	<i>Cottus cognatus</i>
Percidae	
fantail darter	<i>Etheostoma flabellare</i>
johnny darter	<i>Etheostoma nigrum</i>

Table 6. Fish species collected from Gilmore Creek watershed (four sites) during 1992 and 1993.

<u>Family/ Common name</u>	<u>Scientific name</u>
Umbridae	
central mudminnow	<i>Umbra limi</i>
Salmonidae	
brown trout	<i>Salmo trutta</i>

Table 7. Fish species collected from Burns Valley Creek watershed (six sites) during 1992 and 1993.

<u>Family / Common name</u>	<u>Scientific name</u>
Cyprinidae	
bluntnose minnow	<i>Pimephales notatus</i>
blacknose dace	<i>Rhinichthys atratulus</i>
longnose dace	<i>Rhinichthys cataractae</i>
Catostomidae	
white sucker	<i>Catostomus commersoni</i>
Ictaluridae	
yellow bullhead	<i>Ameiurus natalis</i>
tadpole madtom	<i>Noturus gyrinus</i>
Umbridae	
central mudminnow	<i>Umbra limi</i>
Salmonidae	
brown trout	<i>Salmo trutta</i>
brook trout	<i>Salvelinus fontinalis</i>
Centrarchidae	
green sunfish	<i>Lepomis cyanellus</i>
bluegill	<i>Lepomis macrochirus</i>
Percidae	
mud darter	<i>Etheostoma asprigene</i>
johnny darter	<i>Etheostoma nigrum</i>

Table 8. Fish species collected from Pleasant Valley Creek watershed (two sites) during 1992 and 1993.

<u>Family /Common name</u>	<u>Scientific name</u>
Catostomidae	
white sucker	<i>Catostomus commersoni</i>
Salmonidae	
brown trout	<i>Salmo trutta</i>
Gasterosteidae	
brook stickleback	<i>Culaea inconstans</i>
Percidae	
johnny darter	<i>Etheostoma nigrum</i>
logperch	<i>Percina caprodes</i>

Table 9. Fish species collected from Cedar Creek watershed (two sites) during 1992 and 1993.

<u>Family/ Common name</u>	<u>Scientific name</u>
Cyprinidae	
blacknose dace	<i>Rhinichthys atratulus</i>
longnose dace	<i>Rhinichthys cataractae</i>
creek chub	<i>Semotilus atromaculatus</i>
Catostomidae	
white sucker	<i>Catostomus commersoni</i>
Ictaluridae	
black bullhead	<i>Ameiurus melas</i>
Salmonidae	
brown trout	<i>Salmo trutta</i>
Percidae	
rainbow darter	<i>Etheostoma caeruleum</i>

Table 10. Fish species collected from Big Trout Creek watershed during 1992 and 1993.

<u>Family/ Common name</u>	<u>Scientific name</u>
Cyprinidae	
blacknose dace	<i>Rhinichthys atratulus</i>
longnose dace	<i>Rhinichthys cataractae</i>
creek chub	<i>Semotilus atromaculatus</i>
Catostomidae	
white sucker	<i>Catostomus commersoni</i>
Salmonidae	
brown trout	<i>Salmo trutta</i>
brook trout	<i>Salvelinus fontinalis</i>
Gasterosteidae	
brook stickleback	<i>Culaea inconstans</i>
Centrarchidae	
bluegill	<i>Lepomis macrochirus</i>

Figure 1. Distribution of American brook lamprey *Lampetra appendix* among the 50 stream sites sampled during 1992 and 1993. On this and all following figures, closed circles represent sites where the species was captured, whereas open circles denote sites where the species was not captured.

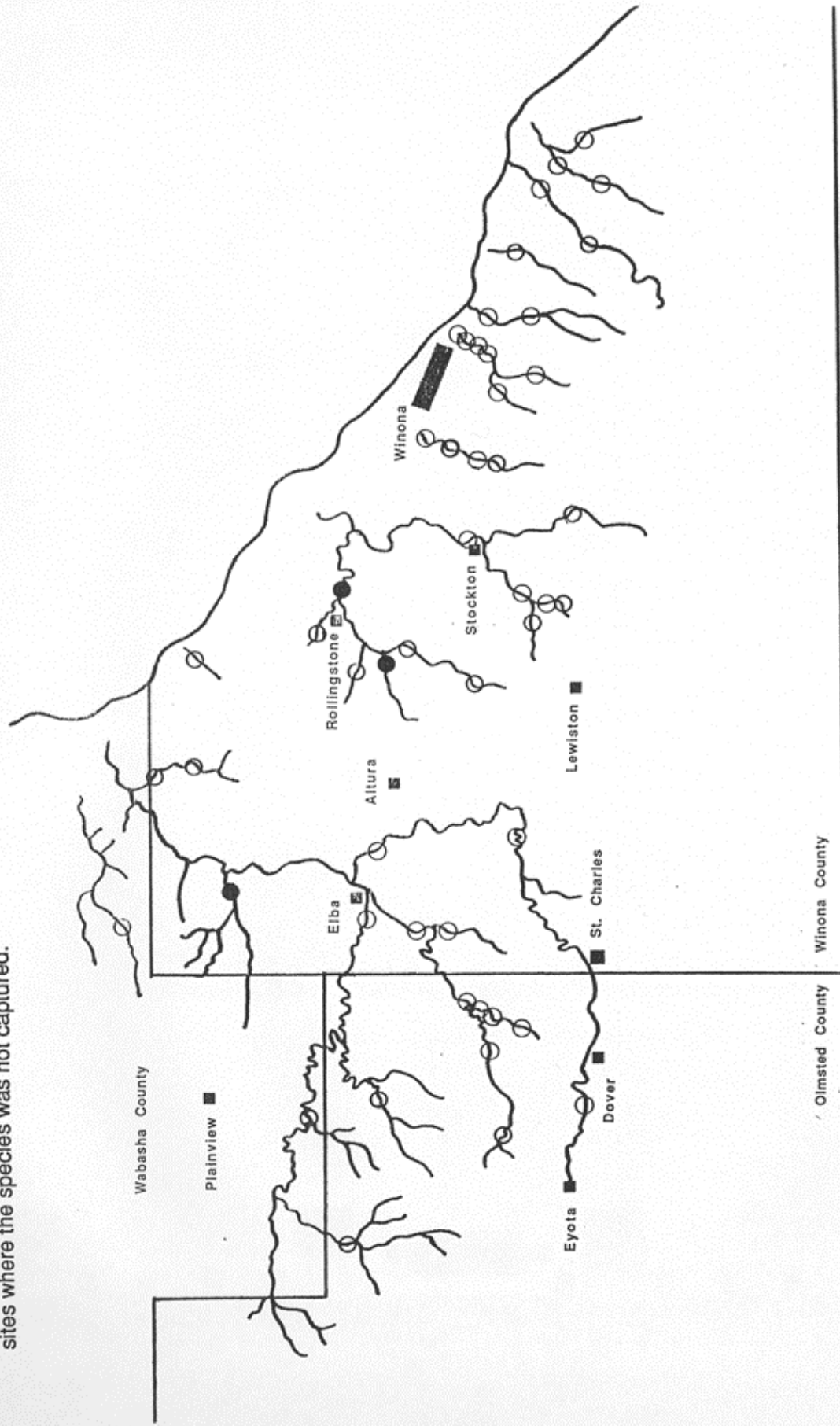


Figure 3. Distribution of common shiner *Luxilus cornutus* among the 50 stream sites sampled during 1992 and 1993.

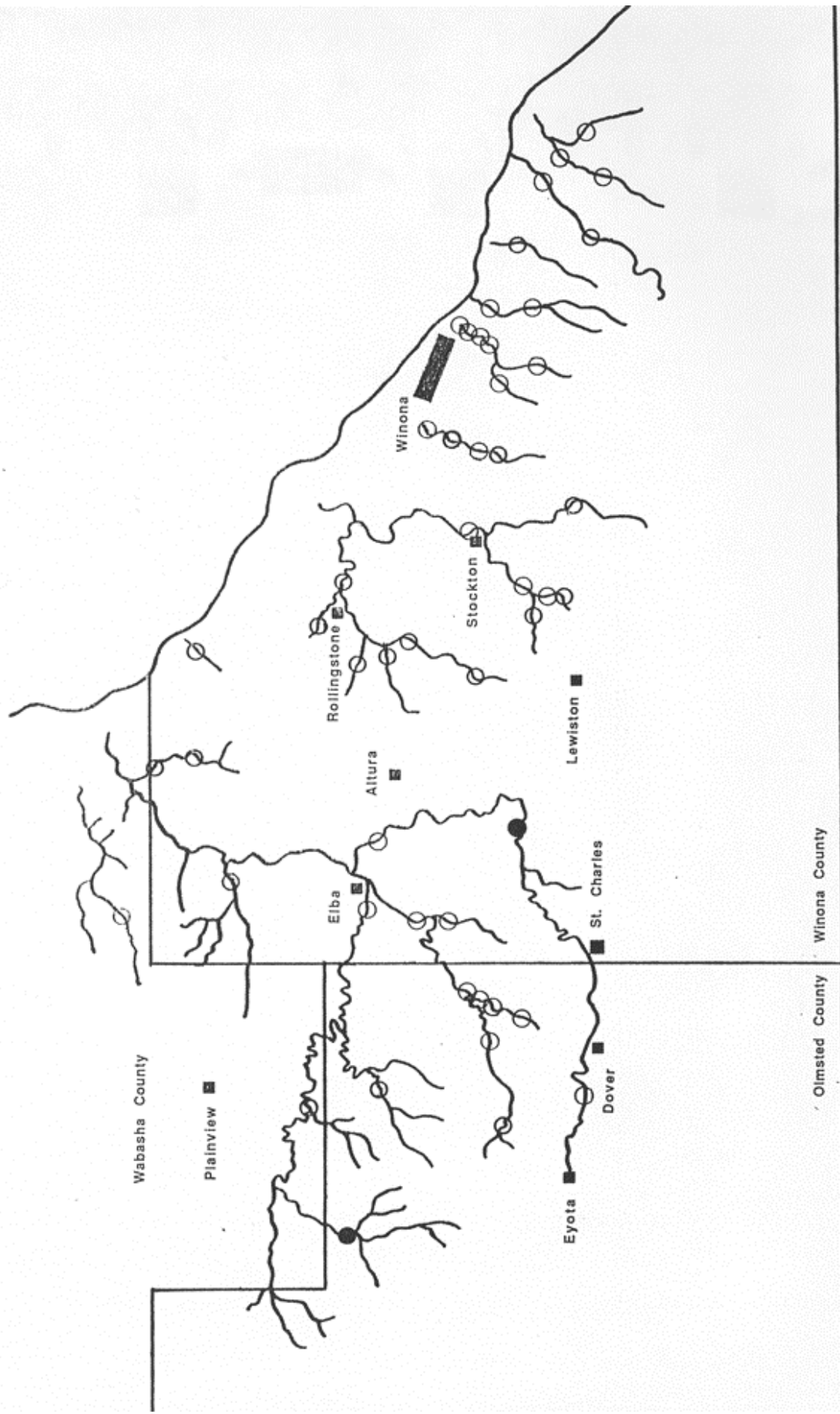


Figure 4. Distribution of bigmouth shiner *Notropis dorsalis* among the 50 stream sites sampled during 1992 and 1993.

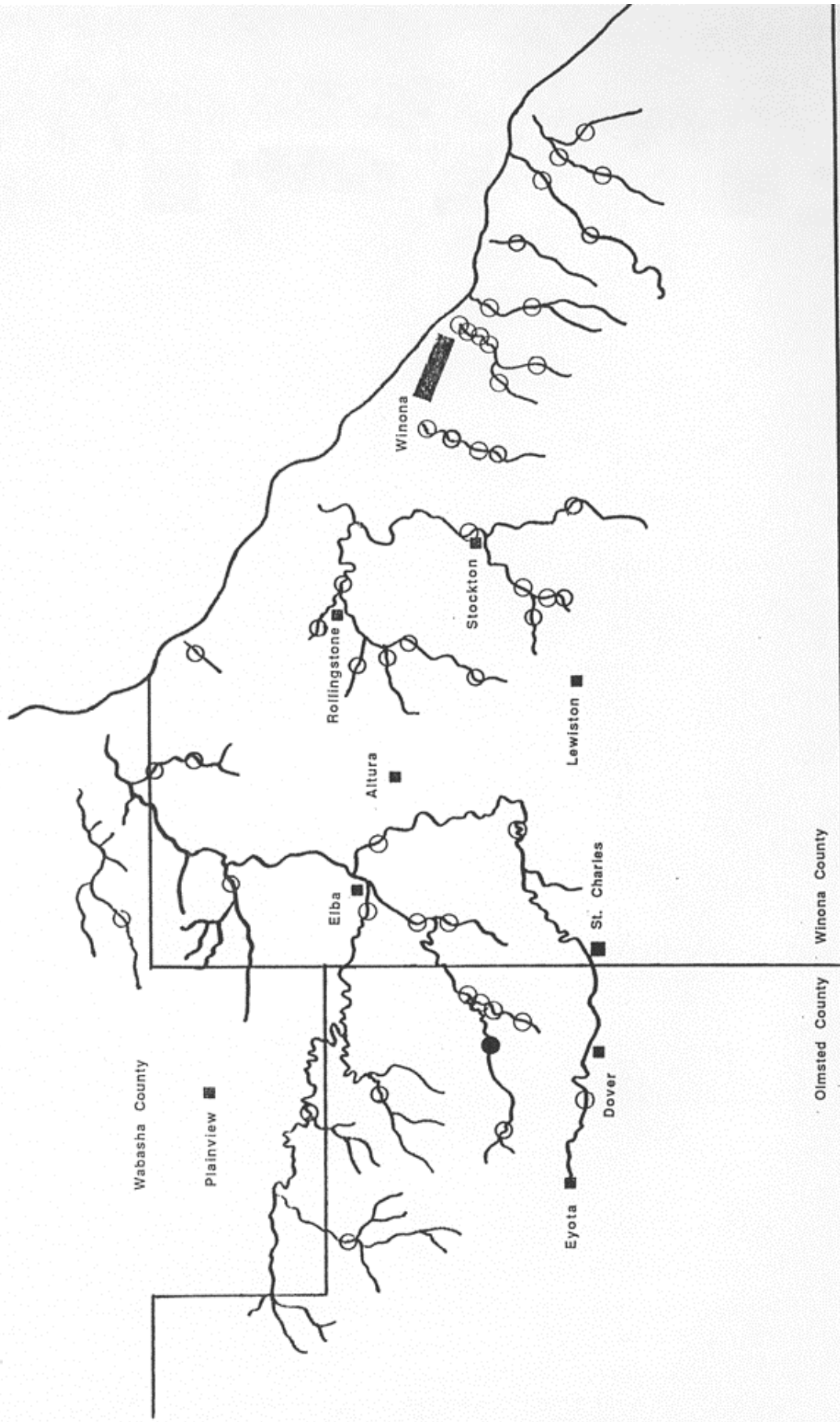


Figure 5. Distribution of southern redbelly dace *Phoxinus erythrogaster* among the 50 stream sites sampled during 1992 and 1993.

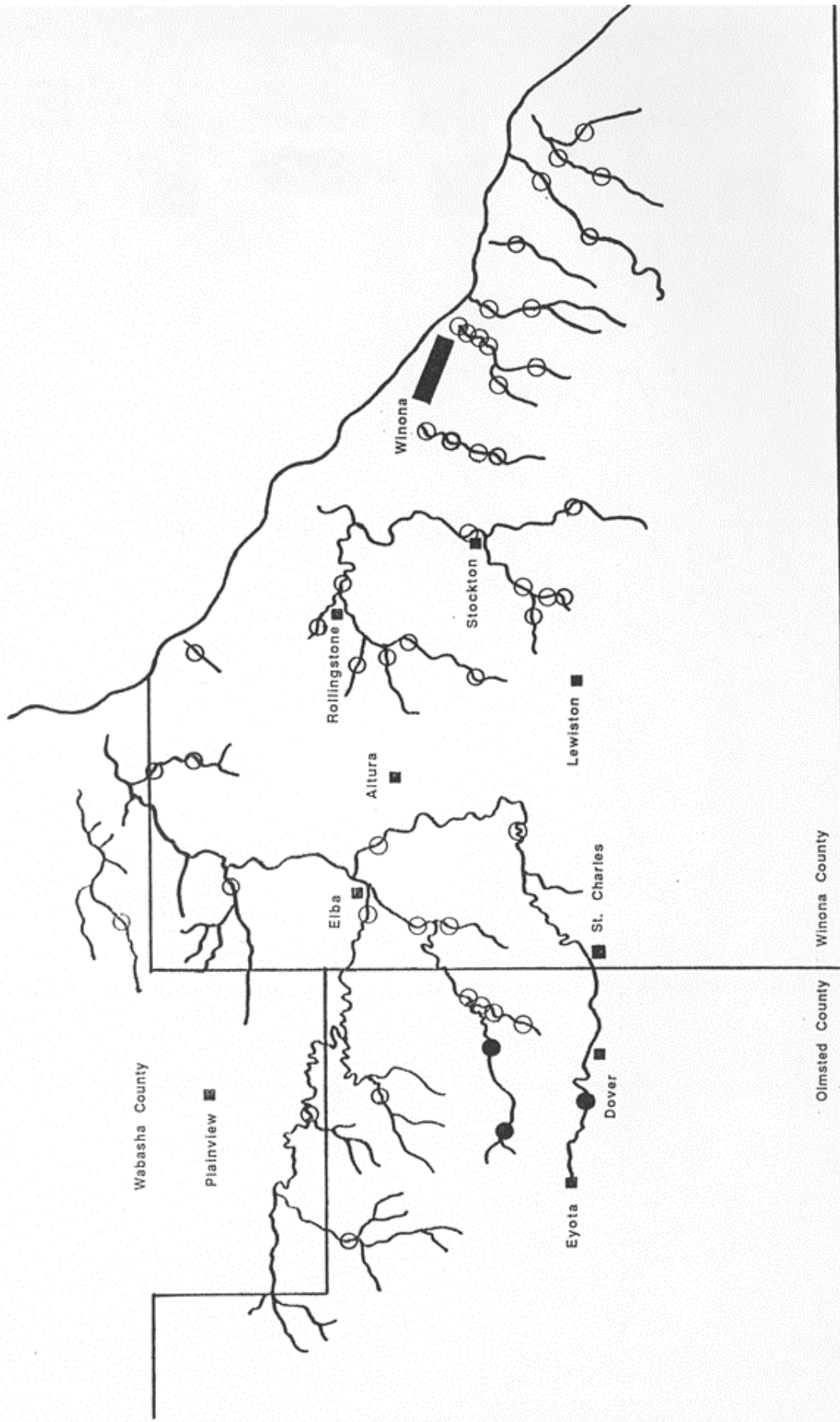


Figure 6. Distribution of bluntnose minnow *Pimephales notatus* among the 50 stream sites sampled during 1992 and 1993.

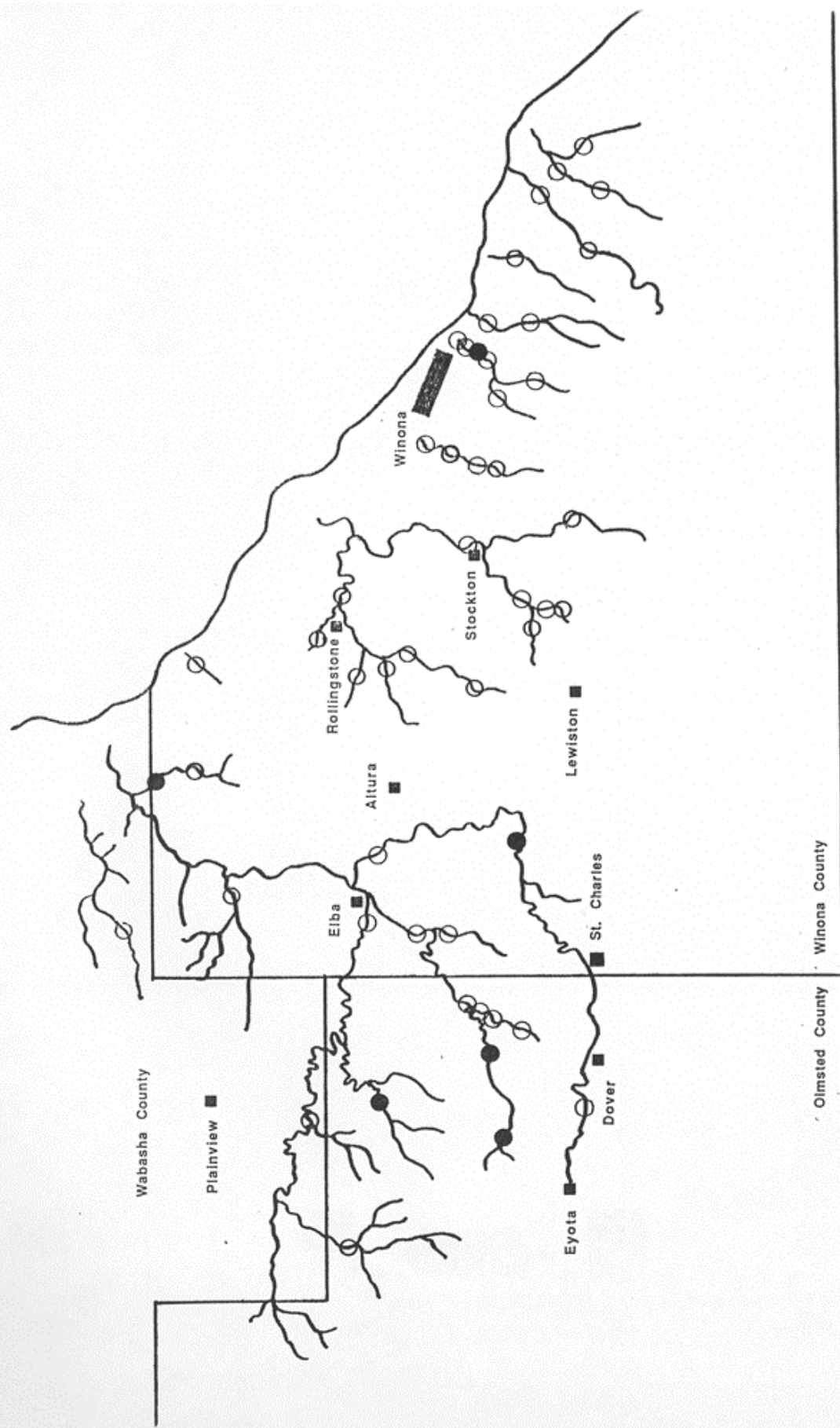


Figure 8. Distribution of longnose dace *Rhinichthys cataractae* among the 50 stream sites sampled during 1992 and 1993.

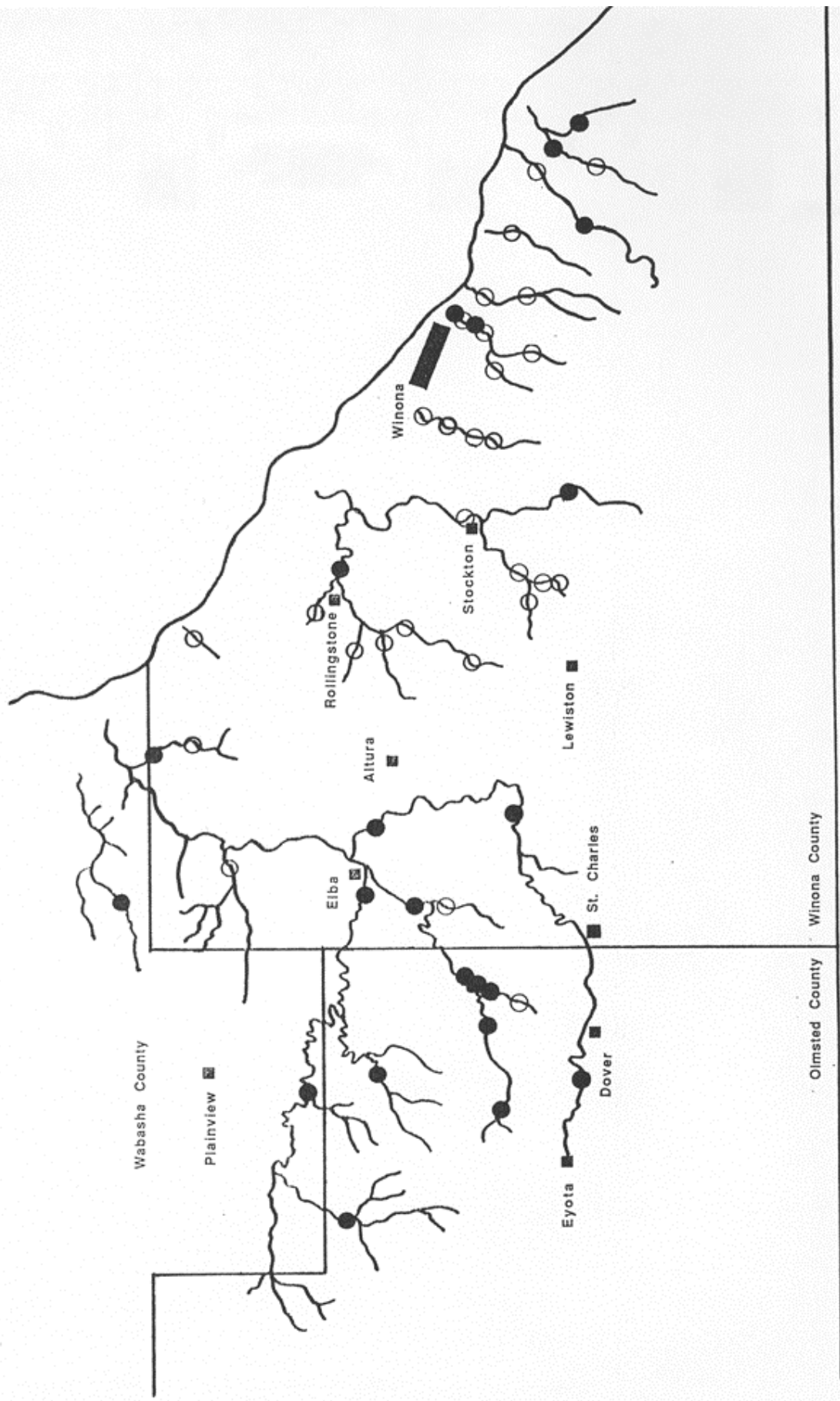


Figure 9. Distribution of creek chub *Semotilus atromaculatus* among the 50 stream sites sampled during 1992 and 1993.

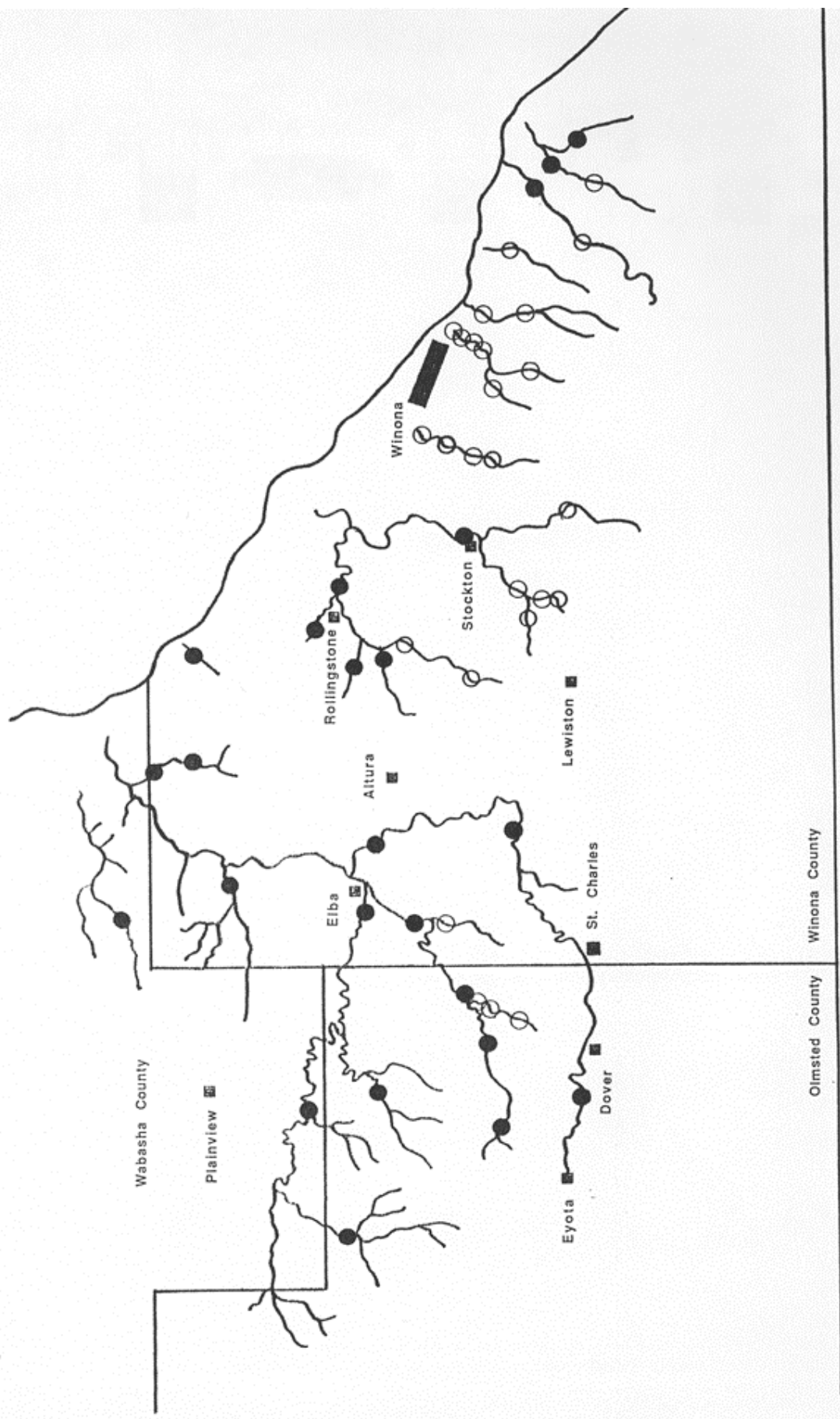


Figure 10. Distribution of white sucker *Catostomus commersoni* among the 50 stream sites sampled during 1992 and 1993.

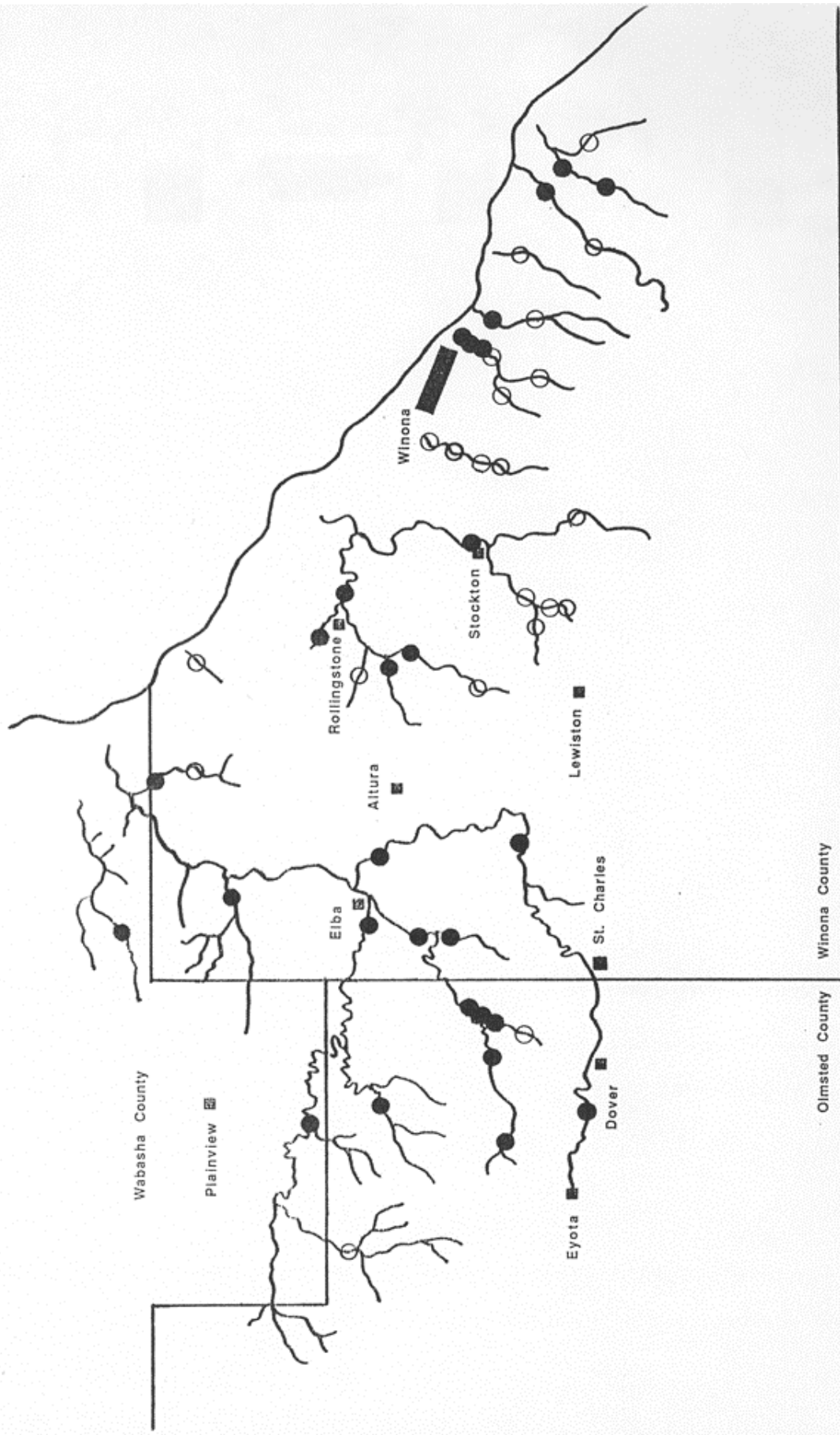


Figure 11. Distribution of black bullhead *Ameiurus melas* among the 50 stream sites sampled during 1992 and 1993.

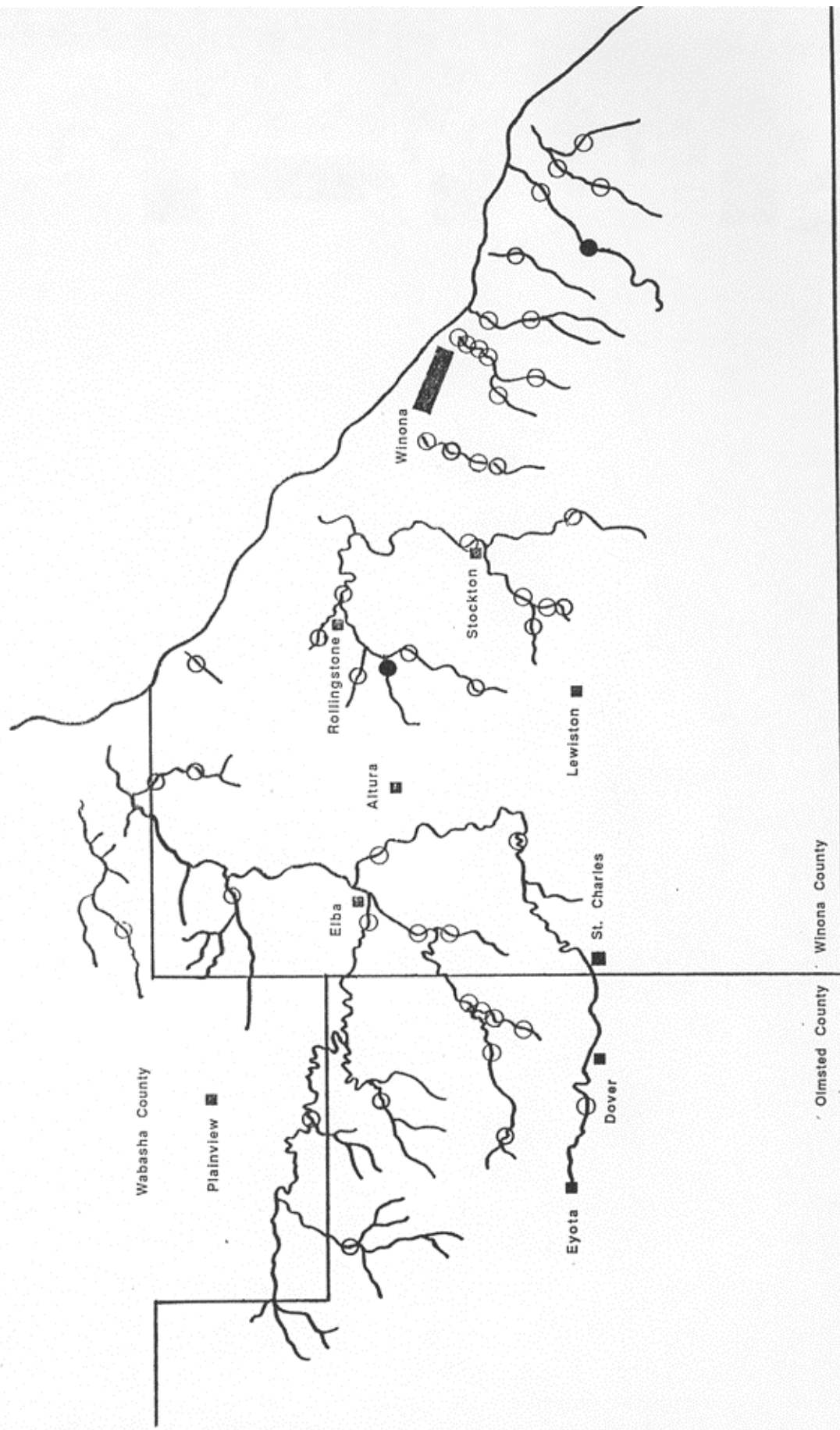


Figure 12. Distribution of yellow bullhead *Ameiurus natalis* among the 50 stream sites sampled during 1992 and 1993.

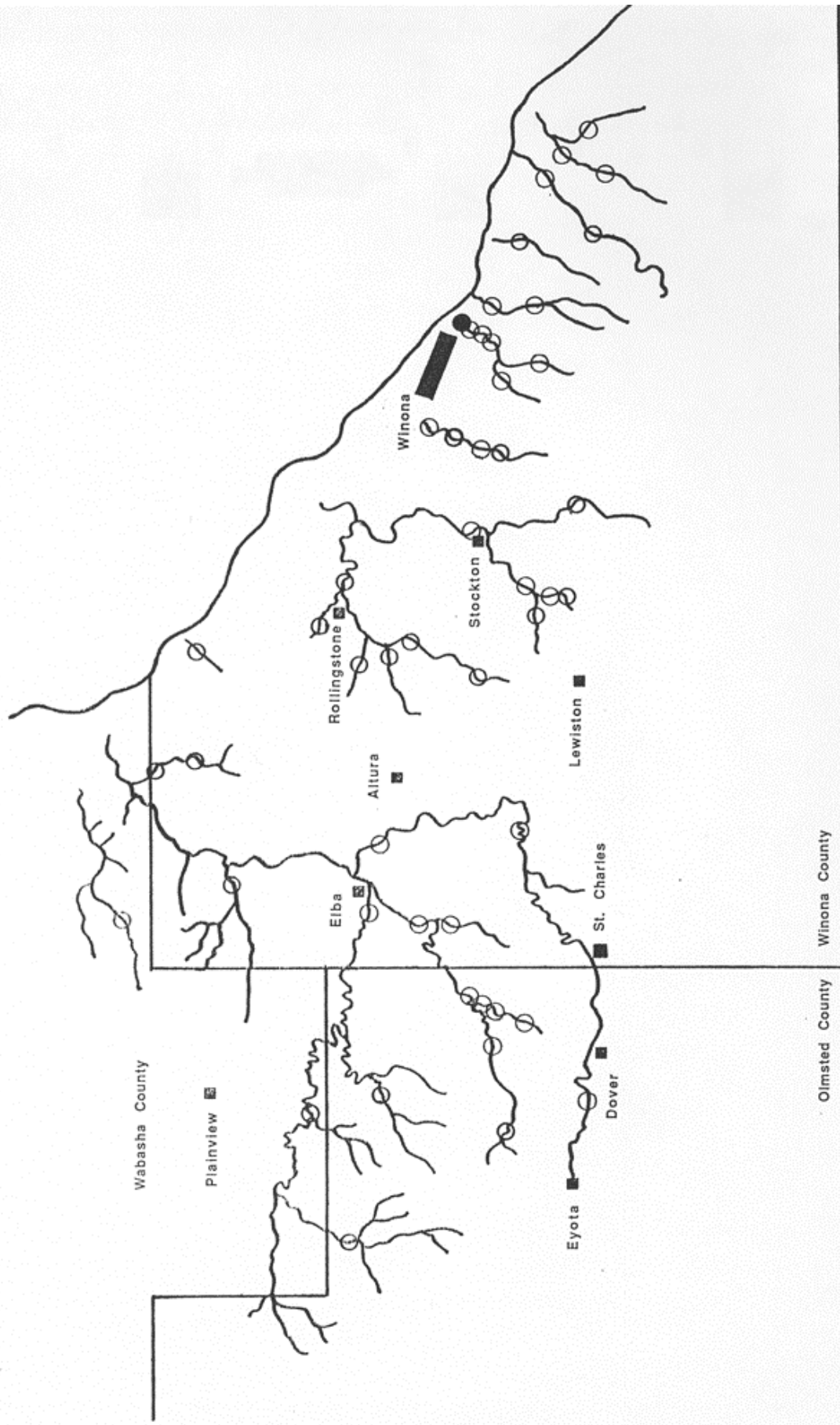


Figure 13. Distribution of tadpole matdrom *Noturus gyninus* among the 50 stream sites sampled during 1992 and 1993.

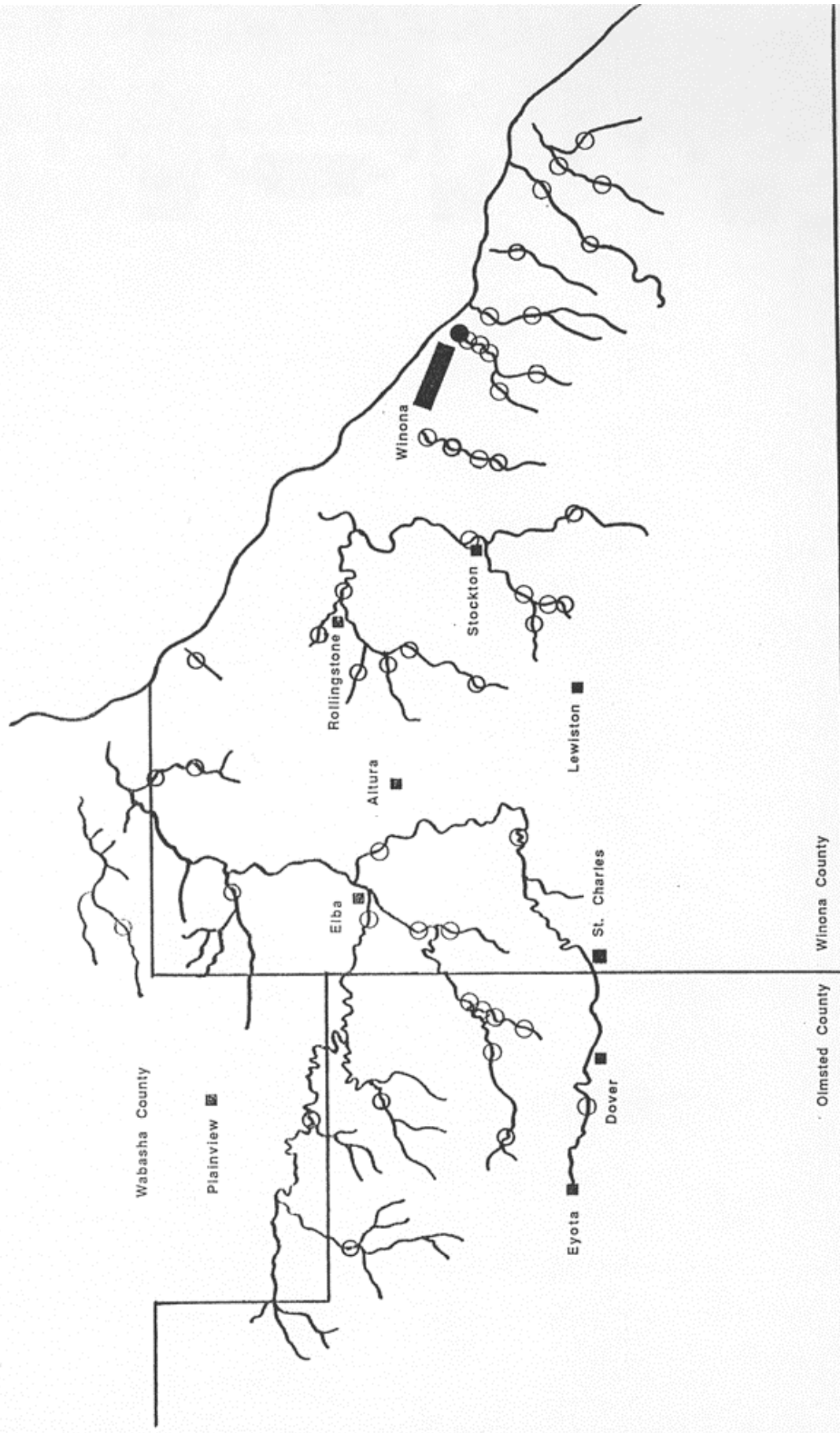


Figure 15. Distribution of rainbow trout *Oncorhynchus mykiss* among the 50 stream sites sampled during 1992 and 1993.

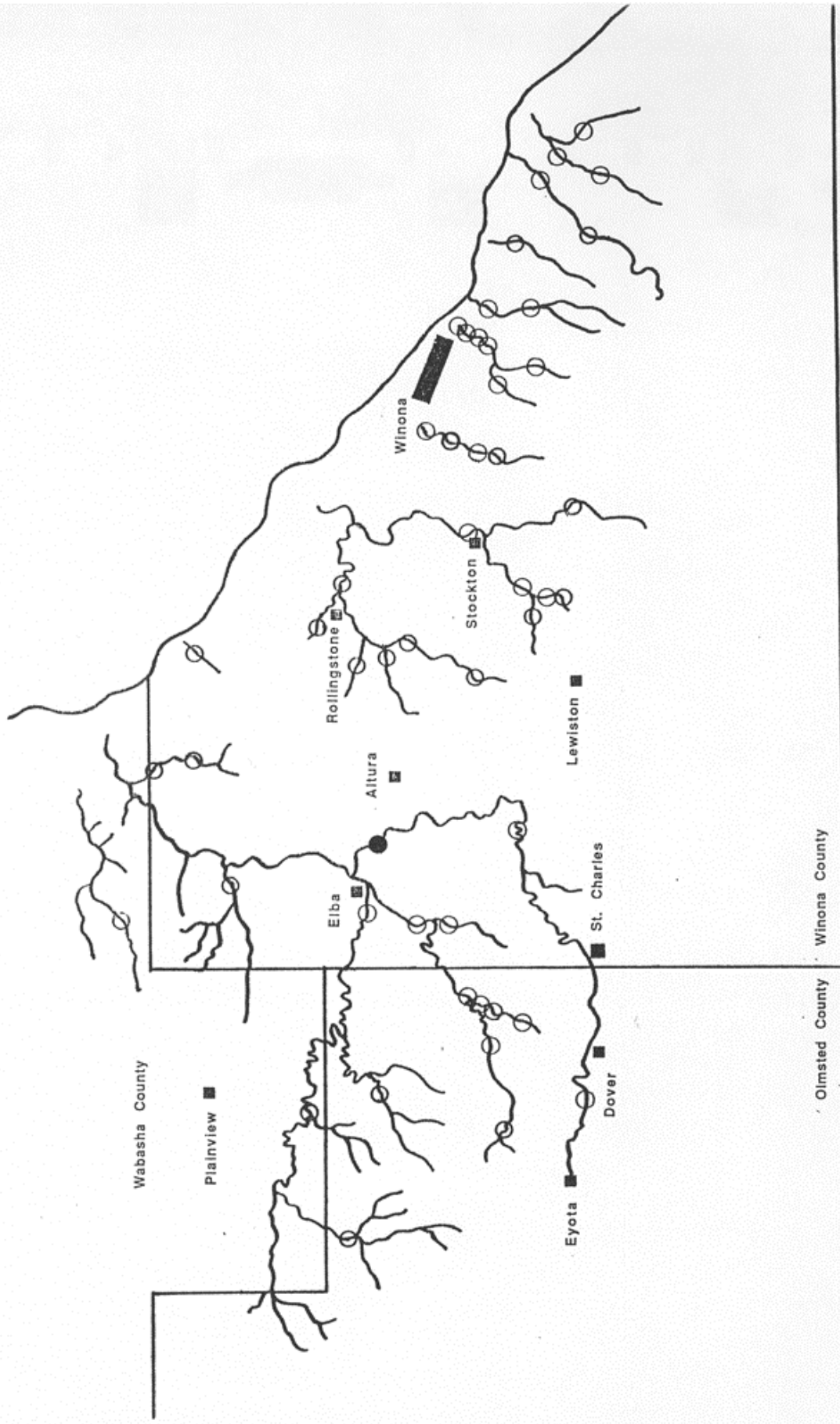


Figure 16. Distribution of brown trout *Salmo trutta* among the 50 stream sites sampled during 1992 and 1993.

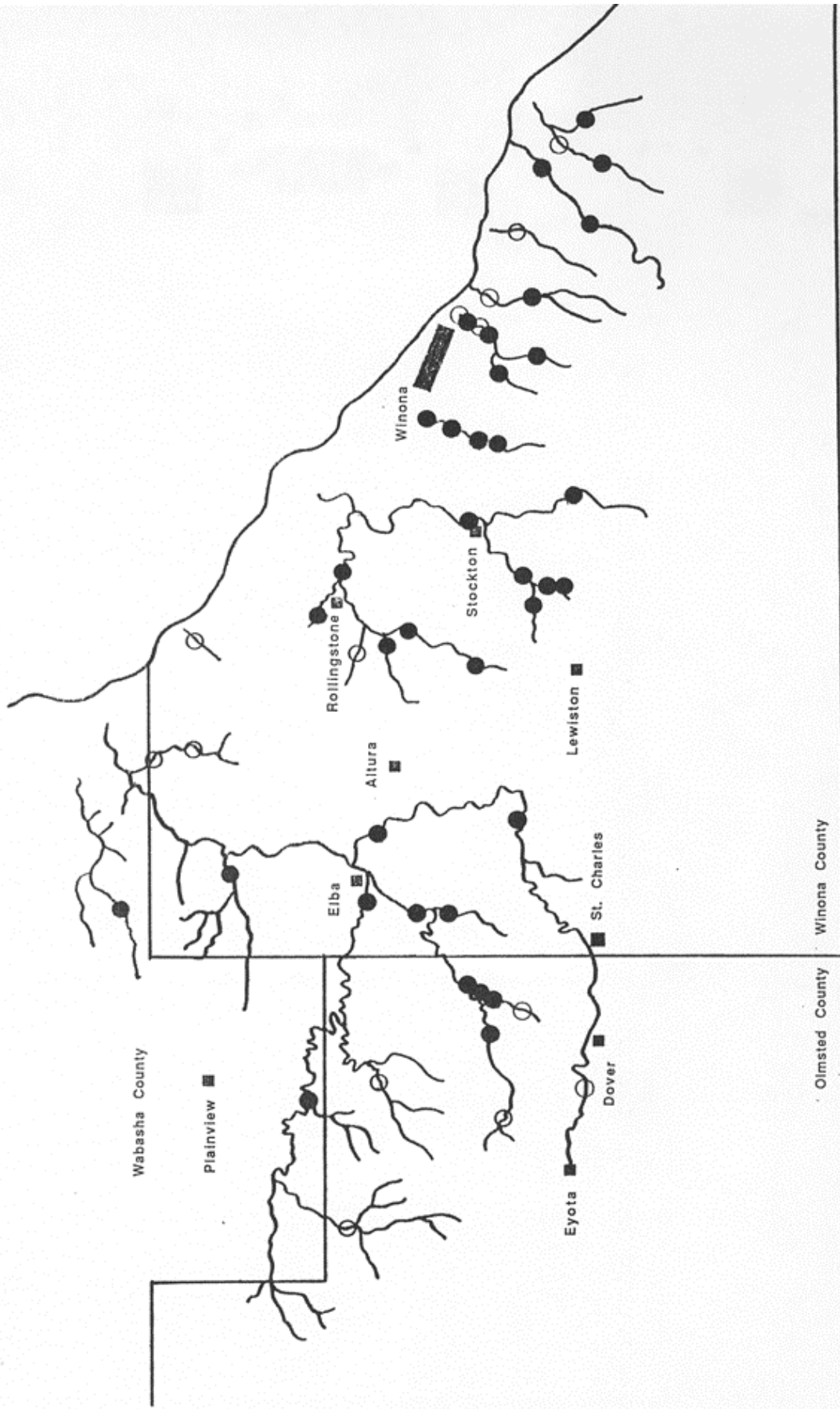


Figure 17. Distribution of brook trout *Salvelinus fontinalis* among the 50 stream sites sampled during 1992 and 1993.

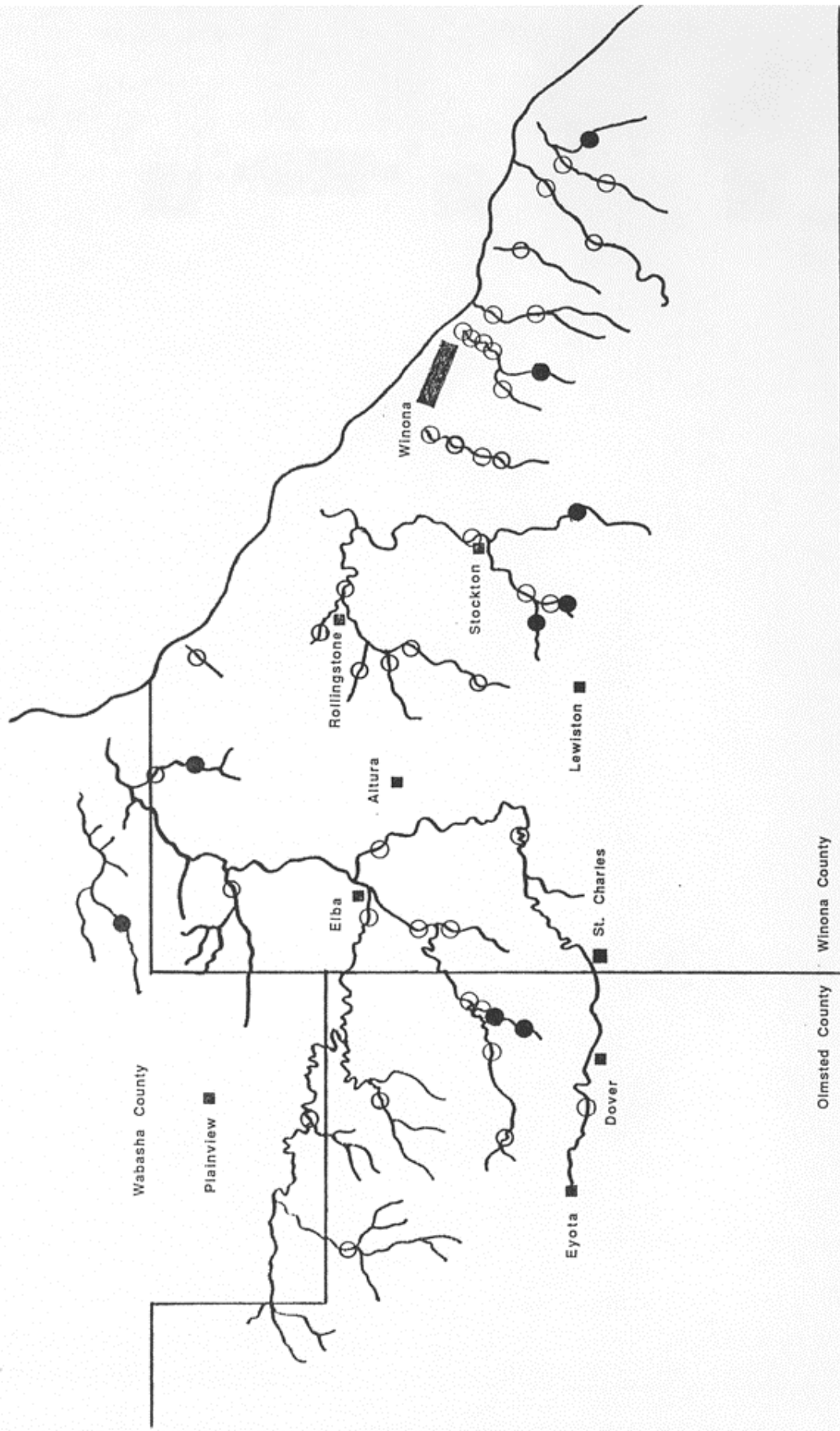


Figure 18. Distribution of brook stickleback *Culaea inconstans* among the 50 stream sites sampled during 1992 and 1993.

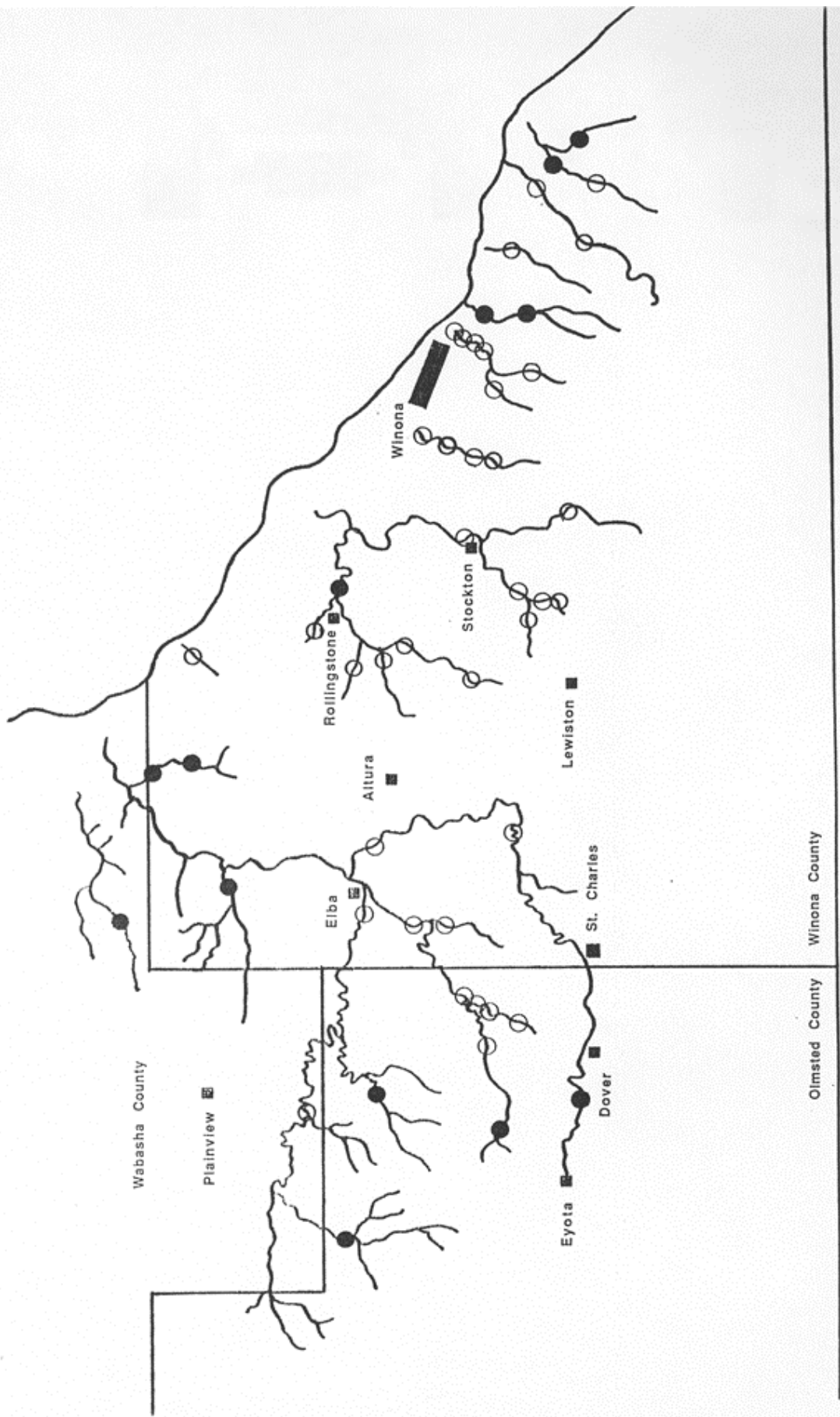


Figure 19. Distribution of green sunfish *Lepomis cyanellus* among the 50 stream sites sampled during 1992 and 1993.

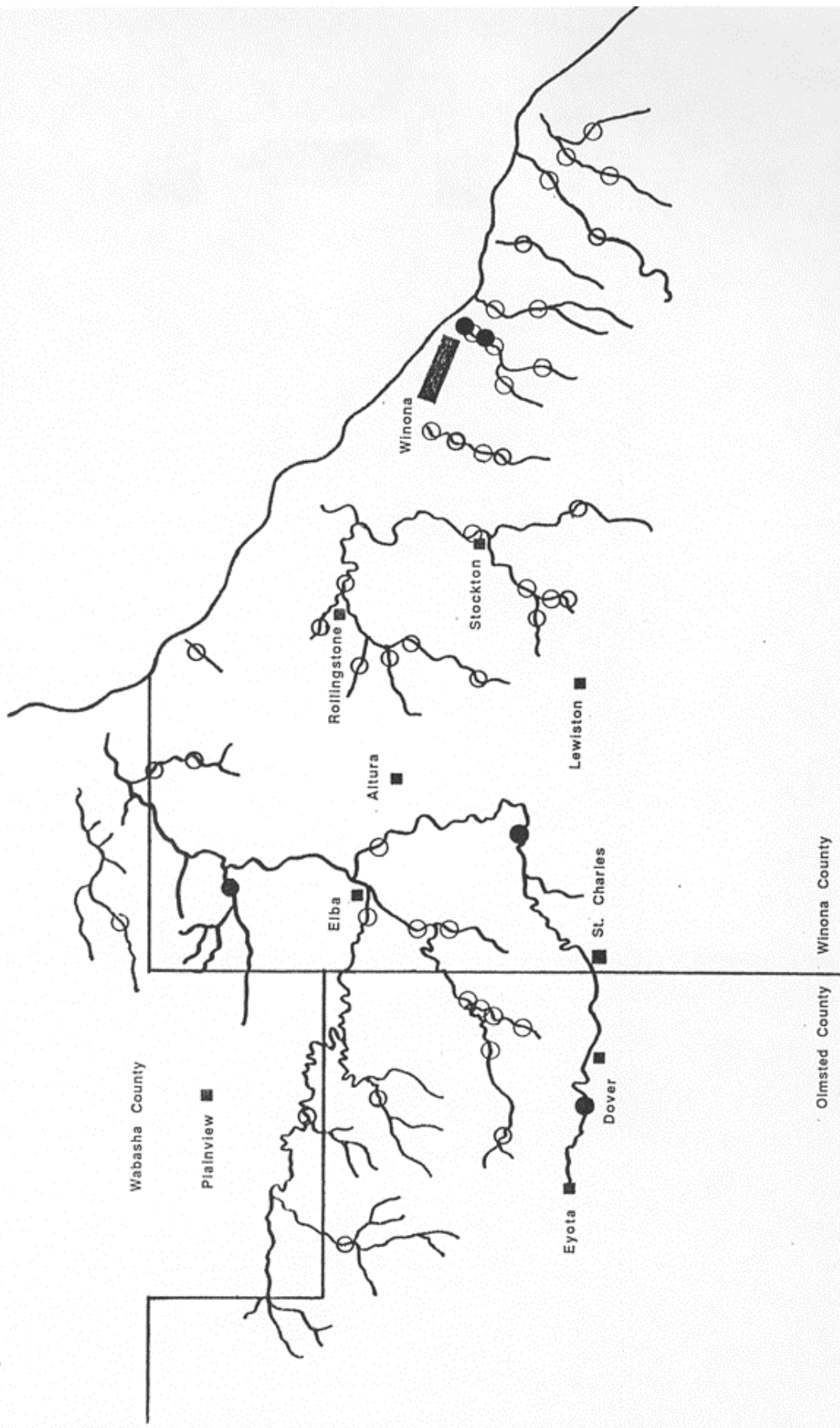


Figure 20. Distribution of bluegill *Lepomis macrochirus* among the 50 stream sites sampled during 1992 and 1993.

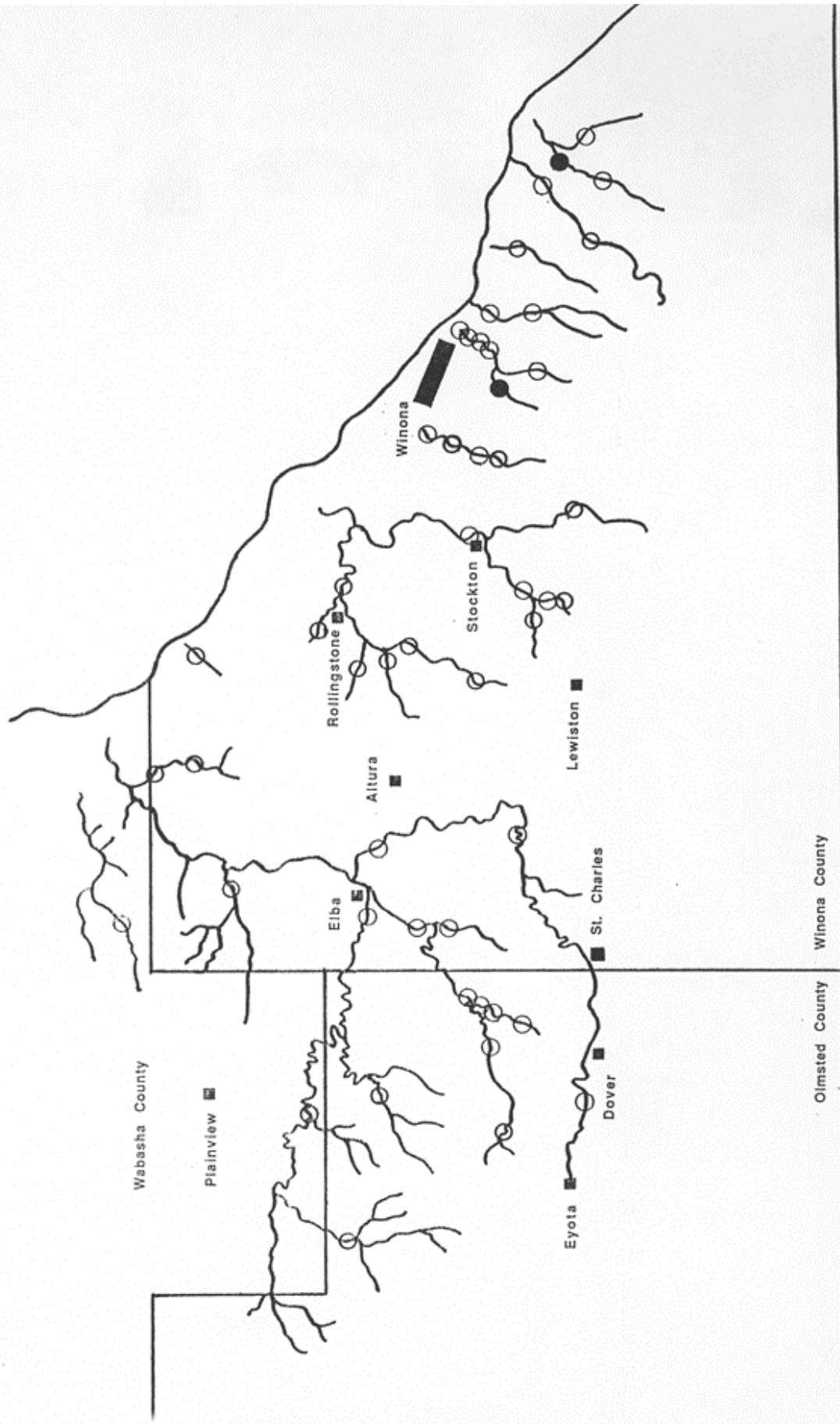


Figure 21. Distribution of mud darter *Etheostoma asprigene* among the 50 stream sites sampled during 1992 and 1993.

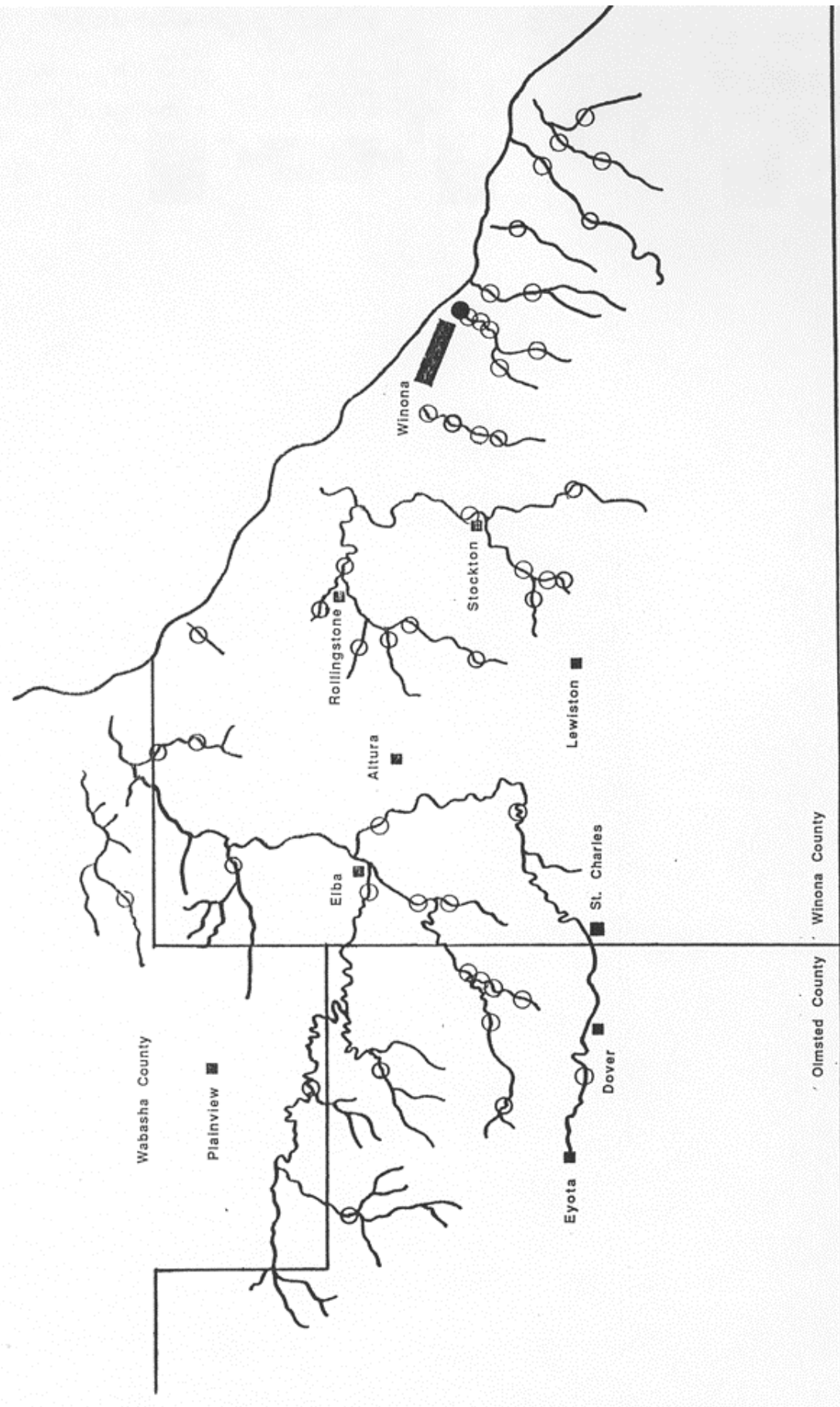


Figure 22. Distribution of rainbow darter *Etheostoma caeruleum* among the 50 stream sites sampled during 1992 and 1993.

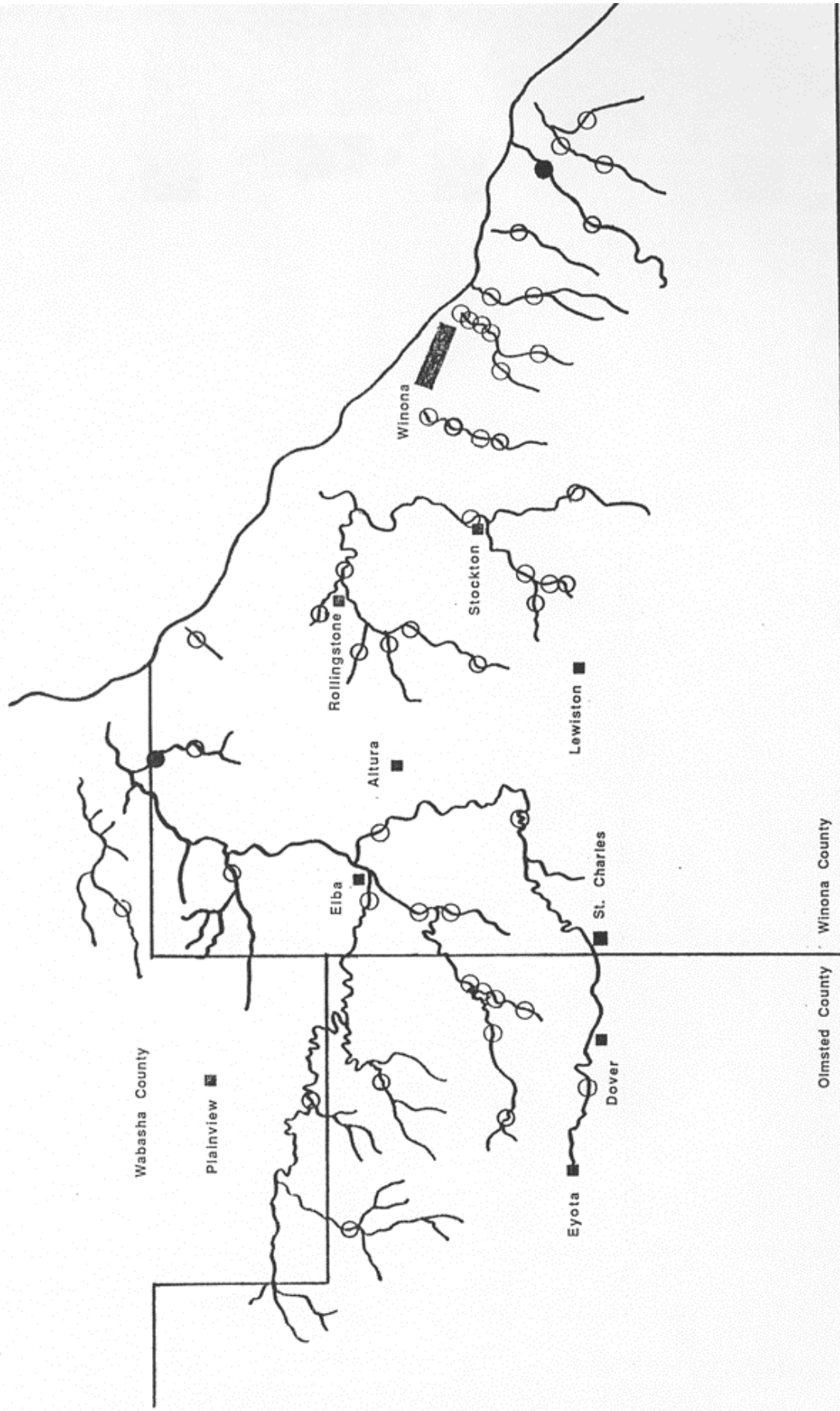


Figure 23. Distribution of fantail darter *Etheostoma flabellare* among the 50 stream sites sampled during 1992 and 1993.

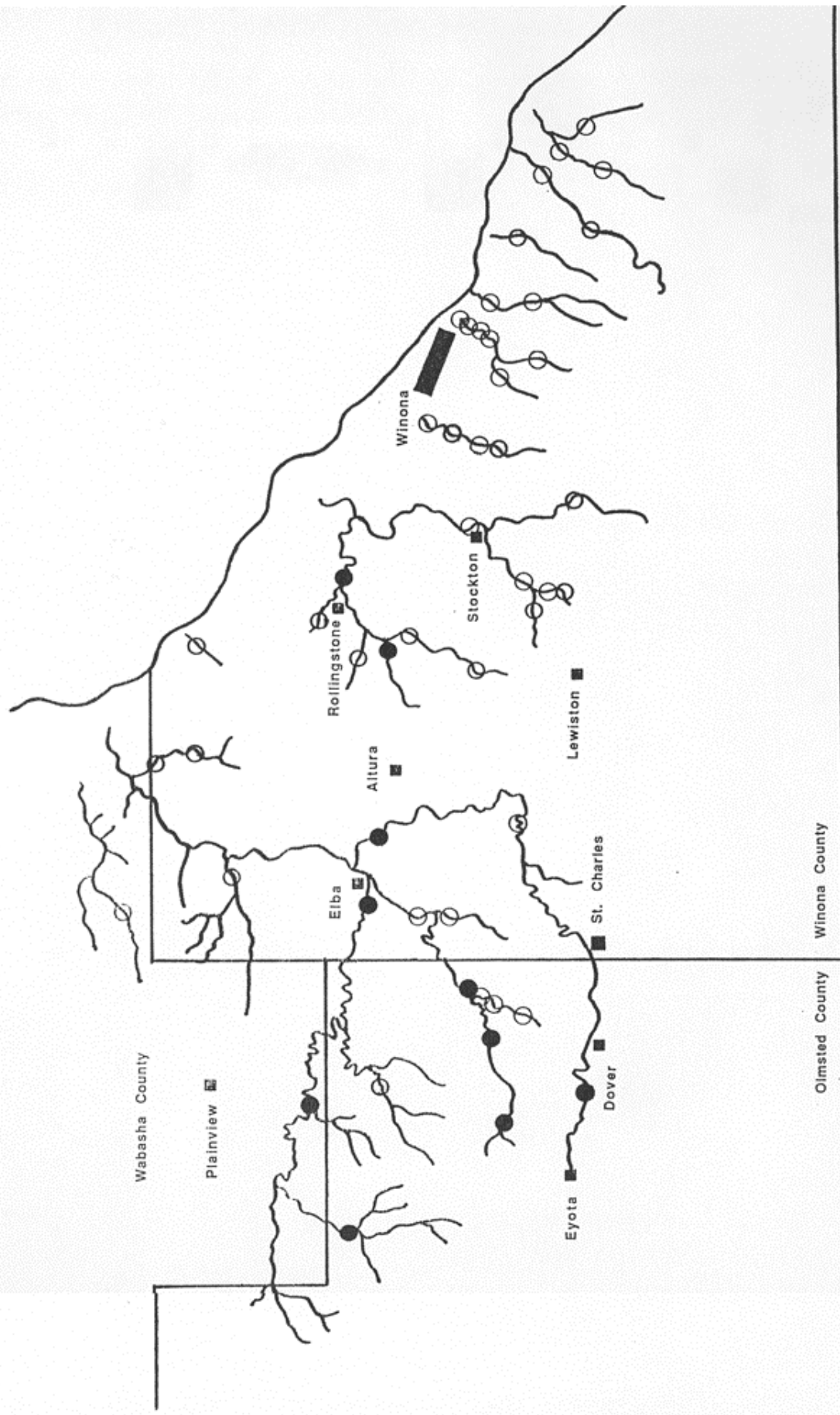


Figure 24. Distribution of johnny darter *Etheostoma nigrum* among the 50 stream sites sampled during 1992 and 1993.

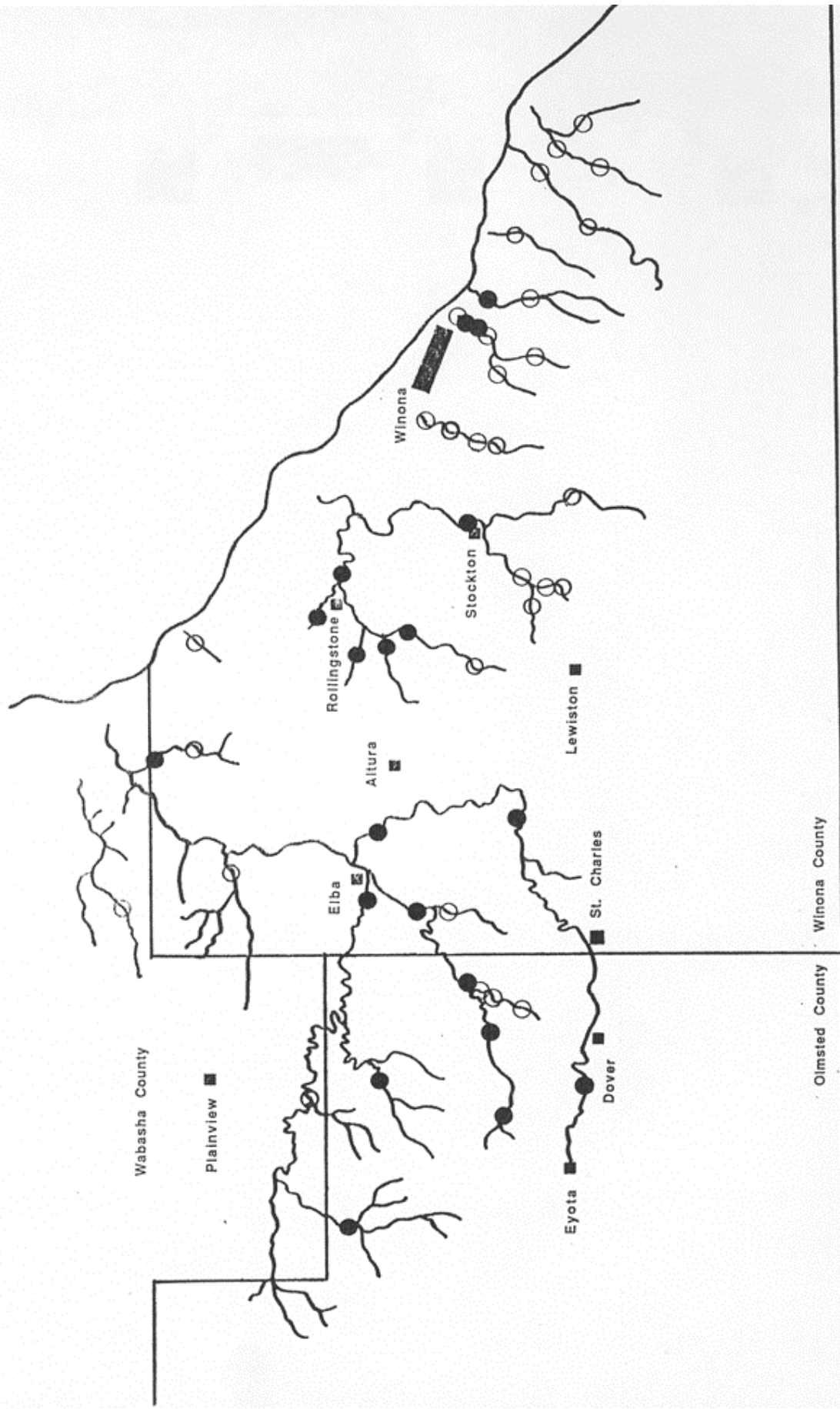


Figure 25. Distribution of logperch *Percina caprodes* among the 50 stream sites sampled during 1992 and 1993.

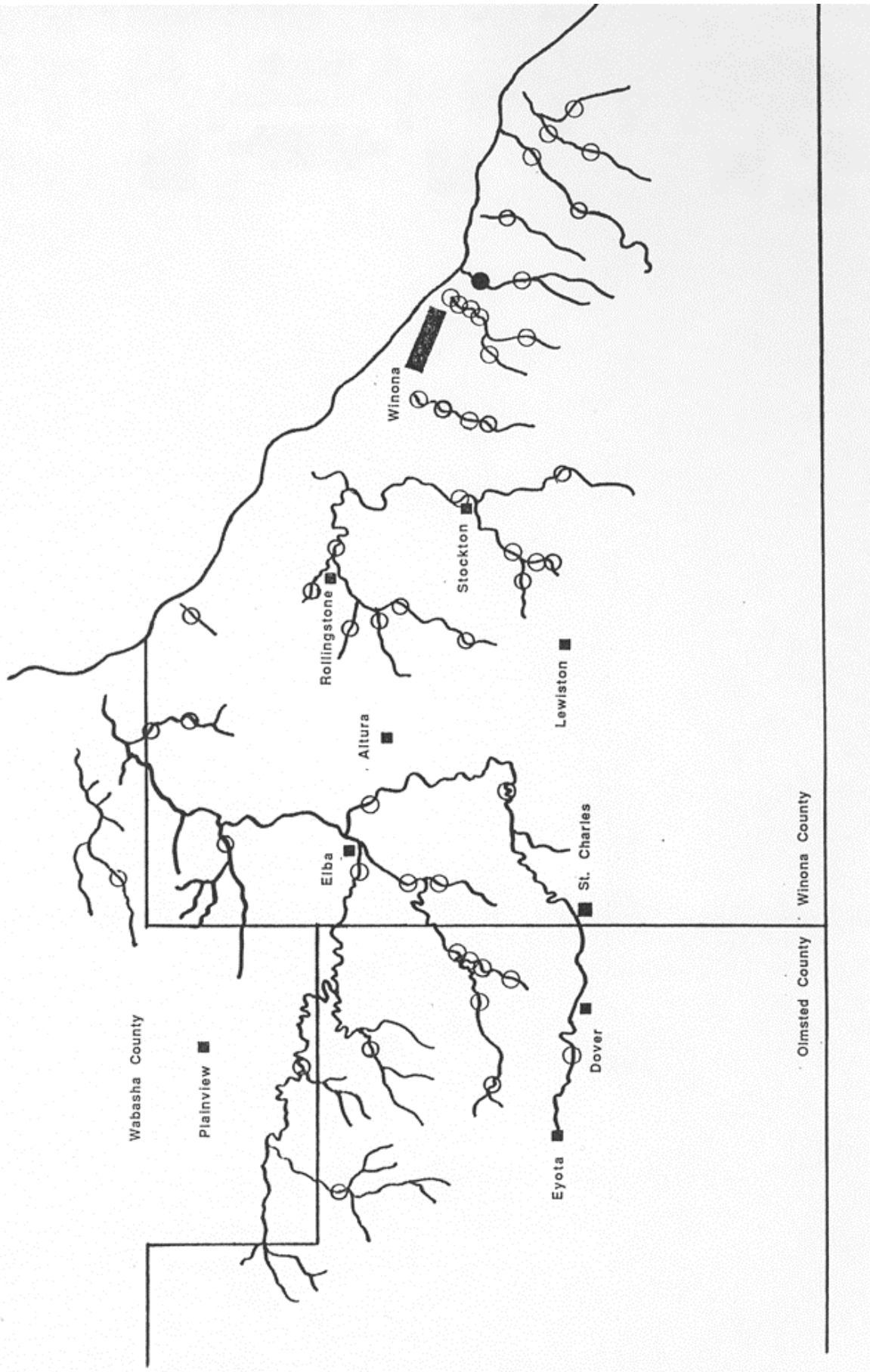


Figure 26. Distribution of mottled sculpin *Cottus bairdi* among the 50 stream sites sampled during 1992 and 1993.

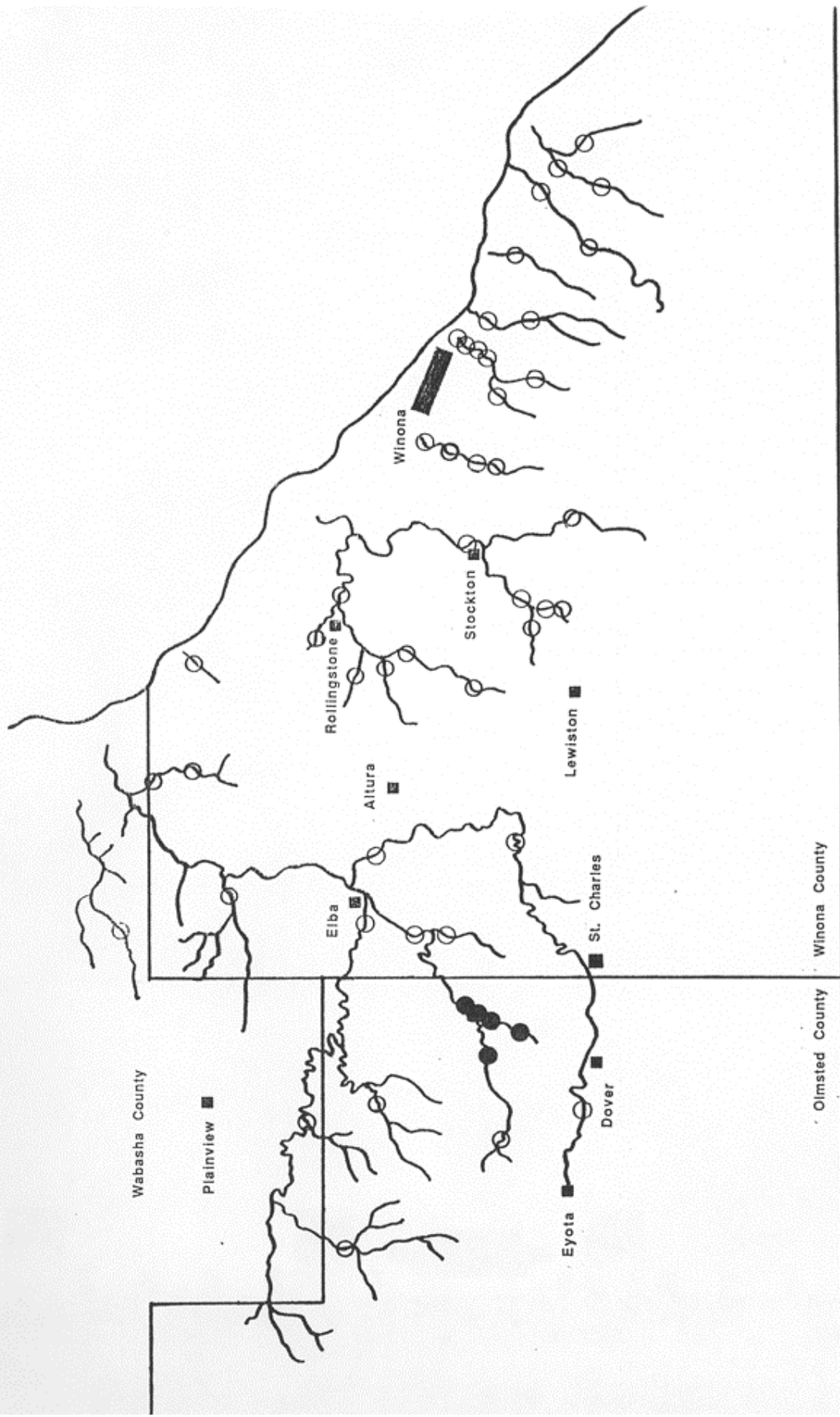


Figure 27. Distribution of slimy sculpin *Cottus cognatus* among the 50 stream sites sampled during 1992 and 1993.

