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ALABAMA BREEDING BIRD ATLAS COMMITTEE

State Coordinator

Richard L. West

AOS Census Committee Chairman and Records Curator

Greg Jackson

Regional Coordinators

Region 1

Paul Kittle
Tom Haggerty

Region 2

Steve McConnell

Region 3

Stan and Dana Hamilton

Region 4

Greg Harber

Region 5

Shawn Reed

Region 6

Larry Gardella

Region 7

Charles Kennedy

Region 8

Don Ware

Region 9

Howard Horne

Maps

Webmaster

Tom Haggerty
tmhaggerty@una.edu



B. Summerour

WELCOME to the 2000-2006 Alabama Breeding Bird Atlas web site. Breeding bird atlas projects are designed to map the distribution of breeding birds within a geographic area - in this instance, Alabama. The 168 **species distribution maps** and **tables** were generated using data collected in **10-square-mile areas** by volunteer surveyors, conservation organizations and agencies, and interested individuals who reported birds seen during their nesting season.

The atlas results posted on this web site provide a complete and reliable picture of breeding bird distribution in Alabama. The information should prove useful to scientists, conservationists, land managers, and government agencies, as well as casual observers simply interested in learning more about birds. The data provided by this web site will serve as a suitable baseline against which comparisons can be made 20 or 200 years from now as we monitor our changing planet. Included with the species map pages are excellent links to web sites that provide additional information (e.g., pictures, vocalizations, range maps, status of species in Alabama, and natural history). For those interested in a printed copy of a species map, a "print quality" pdf file accompanies each map or they can be downloaded from the **"Maps Book"** page.

The primary objectives of the web site are:

- To provide breeding distribution maps for every bird species breeding in Alabama.
- To provide maps that display a 12% sample of reliably studied areas useful for statistical projections and as a baseline against which future changes in the status of breeding birds in Alabama can be measured.
- To provide tables that help summarize and interpret atlas results.
- To provide additional maps and links to sites that can help interpret the atlas results and help people learn more about birds.



We hope you enjoy the site and return often.

Alabama Breeding Bird Atlas Committee of the AOS

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Contributors and Special Assistance

Atlasers

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Atlasers

Anna Adams, Marge Adcock, Carol Alford*, Randy Alford*, Moez Ali, Bianca (BJ) Allen, Karen Allen, Ken Allen, Martha Anderson, David Arnold*, Roger Atchison*, Larry Atha, Patti Atha, Betty Atkinson

Laurie Bailey*, Mark Bailey*, Russell Bailey, Pat Baker, Peggy Baker**, Terry Barger, Lori Barns, Joann Barrow, Fred Bassett***, Leon Bates, Sarah Baydala, Tom Baydala, Giff Beaton*, Henry Beeler, Michael Bell*, Micah Bennett, Traci Berry, Kim Berryhill, Tim Berryhill, Michael Beuerlein, Carla Bevill, Wayne Boldin, Kevin Boles, Samuel Bowman*, Bettye Boyd, Mac Braid, Barbara Brewer, Lela Brewer*, Reeda Brewer, Sharon Brewer, Craig Brown, Duane Brown*, Lynn Brown*, Dick Bruer, Harry Buchanan, Lindsay Burgreen*, Sandy Button, Barbara Byrd

Kevin Calhoun*, David Campbell, Robert Campbell, Wayne Canis, Dale Carruthers, Jerry Carter, Keith Carter, Mary Carton, Jared Caudle, Betsy Chestnutt, Ron Christen***, Alice Christenson*, Lisa Churchill, Joey Ciza, Morris Clark, Roger Clay*, Rick Claybrook, John Cole, Marvin Collins**, Dwight Cooley***, Neill Cowles*, Andrea Crawford, Tom Crenshaw, Jane Crittenden*, Paul Cross, Phillip Crossilin, Garth Crow, Christy Cummings, Dean Cutten*, Raelene Cutten*, Cyril Bianco

Barbara Dale, Harry Dean, Robert Denton, Larry Derrick, Oscar Dewberry, John Dindo, Marion Dobbs**, Carrie Dortch, David Dortch, Shelly Ducharme*, Bob Duncan*, Glenda Duncan, Lucy Duncan*, Scot Duncan, Dexter Duran

Betsy Eagar*, Greg Edmonds, Mike Edopton, Ericha Shelton, Michael Evans*, Danny Everett

Tony Falletta, Jackie Falls, Robert Falls, Michele Farr, Frank Farrell**, Shirley Farrell*, Barry Fleming*, Joann Flirt, Jim Flynn**, Robert P. Ford, Alan Forney, Ann Foster, Eva Franklin, Paul Franklin, Elizabeth French*, William Friday***, Lissa Friedman, Venetia Friend, Sylvia Fullerton

Lawrence Gardella***, Ben Garmon**, Jeff Garner***, Keith Gauldin, Rex Gay, David George***, Traci George, Jessica Germany***, Jimmy Gilliland, Allison Glascock, Jim Godwin, Katy Goodgame, Clara Granata, J. Barry Grand*, Allison Graves, Scott Gravette*, Courtney Graydon, Kelley Gregory, Teddy Grimes, John Grinstead

Steve Hacker, Andrew Haffenden, Thomas Haggerty**, William Haley, Dana Hamilton***, Stan Hamilton****, Tom Hansknecht, Holly Hanson, Greg Harber***, David Harder*, Martin Hardy, Bert Harris**, Milton Harris*, Ken Harrison, Terry Hartley*, Tuck Hayward, Bruce Heinisch, Paul Helminger, Carolyn Henning, Hill Henry, Joy Herring, Robert Herring, Chazz Hesselein, Richard Hester*, Tyler Hicks*, Geoffrey Hill***, Catherine Hodges, Malcolm Hodges***, Cathy Hoffman, Jeanette Holladay*, Earl Horn**, Cheryl Horncastle*, Howard Horne***, Bill & Loli Howard, Sharon Hudgins**, Keith Hudson*, Keitha Hudson, Edith Hunt**

John Imhof, Debra Jackson*, Greg Jackson***, Terry Jennings, Debbie Johnson*, Jeff Johnson, Kenneth Johnson, Morgan Johnson*, Odis Johnson, Pat Johnson***, Rhett Johnson*, Steve Johnson**, Jud Johnston**, Guy Jones, Jason Jones, Sebastian Jones***

Keith Kamper*, Ty Keith*, Sandra Kendall, Charles Kennedy**, Kim Kewish, Tim Keyes, Helen Kittinger*, Donna Kittle*, Paul Kittle****, Marilyn Kline, Larry Knorr, Alan Knothe, Barbara Korpi, Claire Krusko****, Ken Krusko, Kristin Krusko

Caila Lamont, Liz Langston, John Lavender, Darren LeBlanc, Steve Lee, Marissa Lee-Sasser, Byron Leles, Linda Leles, Shannon Leutzinger, William Lilly, John Lint, Dolly Little, J. A. Lloyd, Janet Lloyd*, Steve Lyda

Keith MacVicar*, Jessie Mahoney, Stan Mahoney, Smoot Major*, George Makowski, Lloyd Malone, Tom Mann, Joyce Marcum, Sue Marden*, Annabel Markle**, Mitchell Marks, Liz Masoner, Malinda McCleary, Richmond McClintock*, Lowell McConnell, Steve McConnell***, Sean McCool, Robin McDonald, Doug McGinty, Mason McGowin, Stuart McGregor*, Bailey McKay*, Jim McKinzie, Jams Mclwain, Laura Meeds*, Vincent Meleski***, Francis Menapace**, Gail Menk**, Andrea Menyhert,

Maurice Mettee, Paul Miliotis, Al Miller*, Ann Miller*, Anne Miller, Kip Miller, Steve Miller, Ralph Mirarchi, Billy Moore, Fred Moore*, R. J. Moore*, John Bruce Morgan, Melissa Morrison, Benton Mullins, Dee Murphy, H. D. Murphy*, Tom Murray

Mary Nash, Fred Nation, Ann Nelson, Bob Nelson, Lynn Nix, Phyllis Nofzinger**

Frank O'Connor*, Haydon Olds, Alberta Oliver

Martin Painter, Charlie Parkel, Barbara Parkins, Johnny Parks**, Clem Parnell, Dee Patterson**, Jack Paul, Rhonda Pearson, H. R. & C. Pedigo, Bob Penhollow*, Anne Petty, Bill Phelan, John Phillips, John Piper, Ned Piper**, George Ponder, John Porter, Tommy Pratt*, Steve Price, David Pylant***

Judy Ramos, Paul Raney Jr.**, Angela Rangel, Ethyl Rasmussen, Bill Redmond, Etta Redmond, Pat Reed, Robert Reed**, Shawn Reed***, Elberta Reid**, Robert Reid***, Rick Remy, Dick Reynolds**, Linda Reynolds**, Pam Richey, Kristen Riordan, Randy Roach, David Robinson, Doug Robinson*, Bill Rogers, Brian Rolek, Mary Roll*, Ghislain Rompre*, Pelham Rowan, Jayne Rushin, Michael Russell

John Sanders, Bob Sargent***, Martha Sargent***, Mark Sasser, Terry Schiefer*, Evan Schneider, Todd Schneider**, Jim Schrenkel, Lloyd Scott, Steve Seibert, Donald Self****, Judy Self****, Nicholas Sharp*, Jim Shedd, Stephen Shell, Doug Shelton, Russell Sherrill, Floyd Sherrod, Gary Shurette, Joan Siegwald**, Tom Siegwald**, Damien Simbeck***, Matt Singer, Homer Singleton**, Jack Skalicky*, Maude Skiba, Paul Snell, Carolyn Snow**, Phil Snow, Eric Soehren**, Scott Somershoe*, Virginia Spizak, Buell Springer, Barbara Stedman***, Jimmy Stephenson, Fred Stevenson, Matthew Stowe, John Stowers, Nikki Strain, Ray Stroud, Bill Summerour*, John Swan, Mary Swanson, Ann Sweeney

Keith Tassin, Betsy Tetlow, Philip Tetlow, Mary Theberge, Dale Thomas, A Thompson-Graves, Pat Thorpe, Dagmar Thurmond, Daniel Toole, James Tucker, John Tyson

John Upton, Johndra Upton

Mark Van Hoose*, Demmie Vaughn, Russell Vaughn, Barry P. Vittor

Mary Waldrip*, Jewell Wallace, Bill Walls, Yong Wang, Ken Ward*, Rufina Ward, Carol Ware**, Donald Ware****, Shirley Wayland***, Gary Wayner, Jimmy Wells**, Wanda Wesson, Chan West, Lorna West**, Ned West, Rick West****, Alice June White, Karen White, Phillip White*, Terry Whitehurst, Sarah Whitfield*, Clifford H. Wilford, Barbara Williams, Jim Williams, Ruth Williamson, Karen Wilson, Mike Wilson, Helena Wood**, Beth Wood, Dee Woodham, Mary Woodrow, Don Wooldridge*, Steve Woolley, Harriett Wright***, Larry Wright*

Connie Yeardley, Jon Yoder

* >100 atlas records, ** >500, *** >1000 , **** >5000, ***** >10,000



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METHODS

Atlas Grid

To conduct the project an atlas grid (Fig. 1) was established and based on the US Geological Survey maps, 7.5 minute series (Quadrangles, or "quads"). Each quad was then divided into 6 equal blocks of about 10 sq miles. About 877 quads and 5087 blocks covered the state.

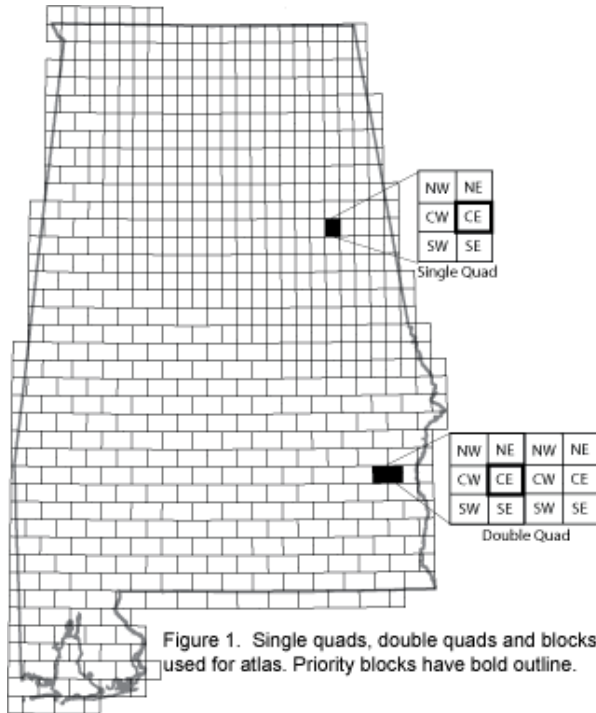


Figure 1. Single quads, double quads and blocks used for atlas. Priority blocks have bold outline.

Sampling

The atlas project used different sampling methods in the upland and Coastal Plain regions of the state. In upland regions, the central east (CE) block from a single quad was surveyed (Fig. 1). If breeding evidence for a species was found in the CE block of a single quad, then the species was considered to breed within that quad (60 sq mi) (Fig. 1). In the Coastal Plain, the CE block of the more western quad of a "double quad" area was sampled (Fig.1). If breeding evidence for a species was found in the western CE block of a double quad, then the species was considered to breed within those two quads (120 sq mi). Sampling effort within these CE blocks or "Priority Blocks" was standardized and therefore results from these blocks best reflect the breeding distribution of each species within the state.

Standardized Distribution

The standardized distribution of a species was determined by using 585 sample quads (blue) and their priority blocks (red) (Fig. 2). If evidence of breeding for a species was found in the priority block within a single or double quad, the quad was colored blue (or shaded) and the level of breeding evidence symbolized (Fig. 3). If the species was found in any of the other 5 blocks of a single quad or 11 blocks of double quad, then the quad was not colored, but the level breeding evidence was symbolized (Fig. 3). It should be repeated, only priority blocks received the same level of effort and focusing on just symbols can lead to an incorrect interpretation of the distribution of a species within the state.

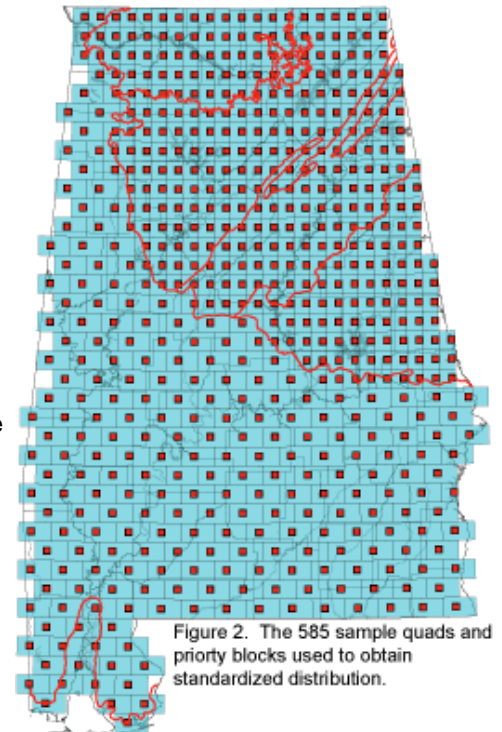
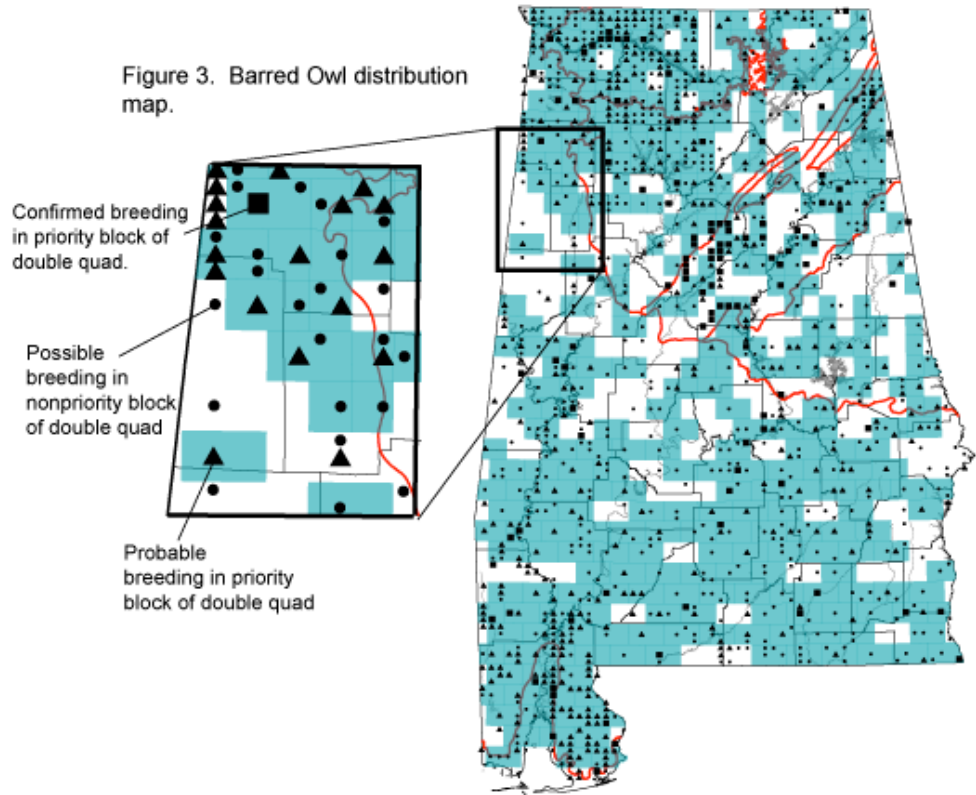


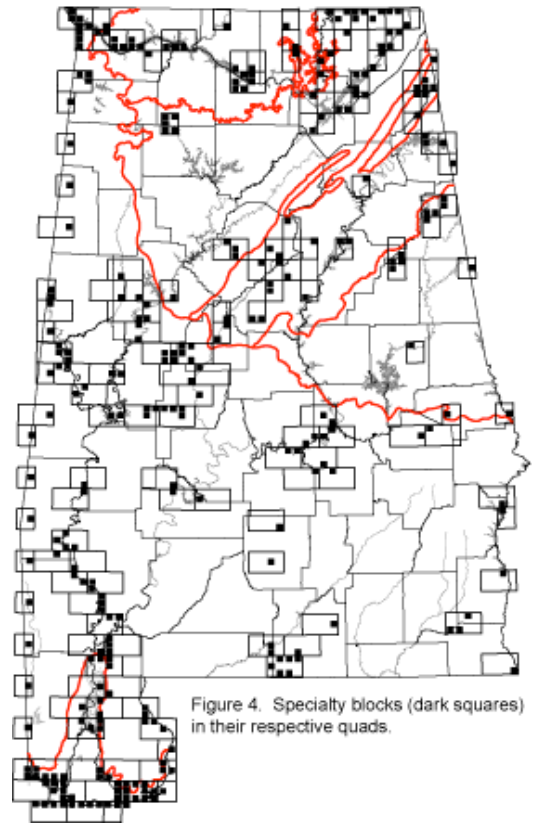
Figure 2. The 585 sample quads and priority blocks used to obtain standardized distribution.

HHHHHHHHHHHHHHHH



Specialty Blocks

Although the primary focus of the sampling effort occurred within the designated CE blocks (Fig. 2), considerable surveying effort also was conducted in "specialty blocks" (Fig 4). These blocks were deemed special because they contained unique habitats, species, or occur along the state border. Sampling these blocks greatly improved the thoroughness of the atlas project.



Atlas Regions

To help organize observers, collect data, and insure proper sampling coverage of the priority blocks, the state was divided into 9 atlas regions (Fig. 5). The boundaries of these regions were formed by roughly following the degree parallels to divide the state into 5 slices, and the 86 E 45' meridian to bisect the state into eastern and western halves. These lines were modified so that the counties were kept together in each region.

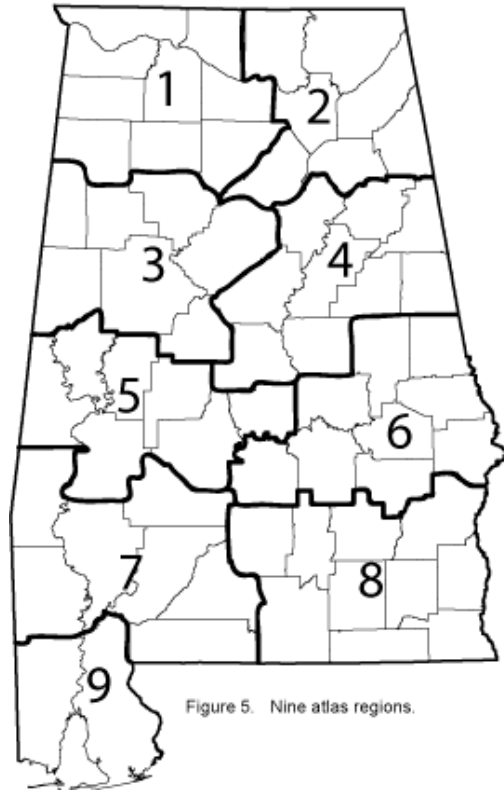


Figure 5. Nine atlas regions.

Region 1: Lauderdale, Limestone, Colbert, Franklin, Lawrence, Morgan, Marion, Winston, Cullman

Region 2: Madison, Jackson, Marshall, De Kalb, Blount, Etowah, and Cherokee

Region 3: Lamar, Fayette, Walker, Jefferson, Pickens, Tuscaloosa, and Bibb

Region 4: St. Clair, Calhoun, Cleburne, Shelby, Talladega, Clay, Randolph, Chilton, and Coosa

Region 5: Sumter, Greene, Hale, Perry, Marengo, Dallas, and Autauga

Region 6: Tallapoosa, Chambers, Elmore, Macon, Lee, Lowndes, Montgomery, Bullock, Russell

Region 7: Choctaw, Clarke, Wilcox, Monroe, Conecuh, Washington, and Escambia

Region 8: Butler, Crenshaw, Pike, Barbour, Covington, Coffee, Dale, Henry, Geneva, Houston

Region 9: Mobile and Baldwin

Breeding Codes

The breeding codes below were used by observers for species seen in a block. Four major designations (Confirmed, Probable, Possible, Observed) were used to denote the level of confidence that a species was breeding in a block.

The **CONFIRMED** designation was used for a species when there was unquestionable evidence of breeding as indicated by the following:

CN -- Carrying nest material (nest not seen).

NB -- Nest building, not wrens or woodpeckers (see N, below).

DD -- Distraction display (life threatening).

UN -- Used nest or eggshells (caution with this one).

NE -- Nest with Eggs. Cowbird egg or young also confirms host species.

ON -- Occupied nest (contents not determined).

IP -- Incubating position. Don't know if bird is incubating or brooding.

NY -- Nest with Young (seen or surmised).*

FS -- Adult carrying a fecal sac (white) from nest. One way to surmise **NY**.

CF -- Carrying Food (young not seen).

FL -- Short-tailed **F**ledglings, chicks, and young dependent on adults or adults' territory.*

BG -- **B**egging young heard but not seen (e.g., owls, crows).

The **PROBABLE** designation was used for a species when there was very suggestive evidence of breeding but no actual evidence of nesting was found. This designation was used when one of the following was noted:

7 -- Seven or more widely distributed singing males observed in a single visit within safe dates. This code served to direct attention away from common species by providing a way to quickly upgrade them to Probable. It was also the only numerical code that was used and can therefore help indicate how common a species was in a block (i.e., seven or more or less than seven).

P -- Pair detected within suitable habitat and safe dates. You can distinguish a pair by differences in plumage or by behavior (two doves hanging together).

T -- Territorial behavior presumed by presence of singing male at same stop 5 or more days apart.

C -- Copulation or courtship, including mate feeding. Some species copulate away from their breeding territories, hence the caution of not using this as Confirmed breeding.

A -- Agitated behavior or anxiety calls by adults. This includes behavior just short of distraction displays. The loud cries and scolding given by birds in the presence of a snake, a marauding crow, or a female cowbird suggest that it has a nearby nest. This code was not used for responses to taped recorded songs and spishing.

N -- Nest building by wrens or woodpeckers. Male wrens build start nests before pairing, hoping an interested female will come along and line his partly completed nest. Woodpeckers excavate roost cavities. Also for observations falling just short of finding the nest without climbing but where a nest is indicated.

The **POSSIBLE** designation was used for a species when there was suggestive evidence of breeding as indicated by the following:

X -- Species found in suitable habitat within safe dates.

H -- Singing male or territorial call heard in suitable habitat within safe dates.

The **OBSERVED** designation was used for a species when there was no evidence of breeding other than the species being seen within the safe dates. This designation was only recorded consistently for species that nest in colonies (e.g., Great Blue Heron and Double-crested Cormorant) and/or often fly and forage considerable distances from their nesting areas.

Seasonal coverage, Safe Dates and Study Period

Fieldwork was conducted from mid-winter, when great Horned Owls are nesting, into September, when doves and American Goldfinches may still be raising young. Most field work took place in May, June and July, when most species are breeding (geese, nuthatches, and kingfishers are mostly done by June 1, and woodcock even earlier).

"**Safe dates**" were established for most species to reduce that likelihood that migrants would be counted as breeding birds. The first safe date listed for a species was based on when the last migrants are known to pass through the state and local residents first establish territories or begin courtship. The last safe date was based on when returning migrants are known to show up and/or when dispersing local birds leave their territories. Safe dates were dictated by bird movements, not by nesting itself. Evidence of breeding can be noted for a species before or after its safe dates, so effective fieldwork often started early and continued through most of July for most species.

This study was a continuation of an atlas project run in the Tennessee Valley in northern Alabama during 1995-97 under the guidance of the Department of Conservation and Natural Resources (DCNR). Data from that atlas work (3,717 records) were incorporated into this project (265,747 records). Only data from CE blocks were recorded in the 1995-97 and these blocks were revisited between 2002-2006. Preliminary atlas work began in 2000 and 2001, and 38,881 records were collected. The majority (84%) of the breeding bird atlas records, however, were collected between 2002 - 2006.

Ecoregions

To better understand the distribution of bird species within the state, distribution data for the level III ecoregions are presented with the *species maps*. Figure 6 illustrates the level III ecoregions found in Alabama and below are general descriptions of the regions (EPA 2002).

Interior Plateau - The Interior Plateau is a diverse ecoregion extending from southern Indiana and Ohio to northern Alabama. Rock types are distinctly different from the coastal plain sediments and alluvial deposits to the west, and elevations are lower than the Appalachian ecoregions to the east. Mississippian to Ordovician-age limestone, chert, sandstone, siltstone and shale compose the landforms of open hills, irregular plains, and tablelands. The natural vegetation is primarily oak-hickory forest, with some areas of bluestem prairie and cedar glades.

Southwestern Appalachians - Stretching from Kentucky to Alabama, these open low mountains contain a mosaic of forest and woodland with some cropland and pasture. The eastern boundary of the ecoregion, along the more abrupt escarpment where it meets the Ridge and Valley, is relatively smooth and only slightly notched by small, eastward flowing streams. The western boundary, next to the Interior Plateau's Eastern Highland Rim, is more crenulated, with a rougher escarpment that is more deeply incised. The mixed mesophytic forest is restricted mostly to the deeper ravines and escarpment slopes, and the upland forests are dominated by mixed oaks with shortleaf pine. Coal mining occurs in several parts of the region.

Ridge and Valley - This northeast-southwest trending, relatively low-lying, but diverse ecoregion is sandwiched between generally higher, more rugged mountainous regions with greater forest cover. As a result of extreme folding and faulting events, the region's roughly parallel ridges and valleys have a variety of widths, heights, and geologic materials, including limestone, dolomite, shale, siltstone, sandstone, chert, mudstone, and marble. Springs and caves are relatively numerous. Present-day forests cover about 50% of the region. The ecoregion has a diversity of aquatic habitats.

Piedmont - Considered the nonmountainous portion of the old Appalachians Highland by physiographers, the northeast-southwest trending Piedmont ecoregion comprises a transitional area between the mostly mountainous ecoregions of the Appalachians to the northwest and the relatively flat coastal plain to the southeast. It is a complex mosaic of Precambrian and Paleozoic metamorphic and igneous rocks, with moderately dissected irregular plains and some hills. The soils tend to be finer-textured than in coastal plain regions. Once largely cultivated, much of this region has reverted to successional pine and hardwood woodlands, with an increasing conversion to an urban and suburban land cover.

Southeastern Plains - These irregular plains have a mosaic of cropland, pasture, woodland, and forest. Natural vegetation was predominantly longleaf pine, with smaller areas of oak-hickory-pine and Southern mixed forest. The Cretaceous or Tertiary-age sands, silts, and clays of the region contrast geologically with the older metamorphic and igneous rocks of the Piedmont, and with the Paleozoic limestone, chert, and shale found in the Interior Plateau. Elevations and relief are greater than in the Southern Coastal Plain, but generally less than in much of the Piedmont. Streams in this area are relatively low-gradient and sandy-bottomed.

Southern Coastal Plain - This ecoregion consists of mostly flat plains, but it is a heterogeneous region containing barrier islands, coastal lagoons, marshes, and swampy lowlands along the Gulf and Atlantic coasts. This ecoregion is lower in elevation with less relief and wetter soils than the Southeastern Plains. Once covered by a variety of forest communities that included trees of longleaf pine, slash pine, pond pine, beech, sweetgum, southern magnolia, white oak, and laurel oak, land cover in the region is now mostly slash and loblolly pine with oak-gum-cypress forest in some low lying areas, pasture for beef cattle, and urban.

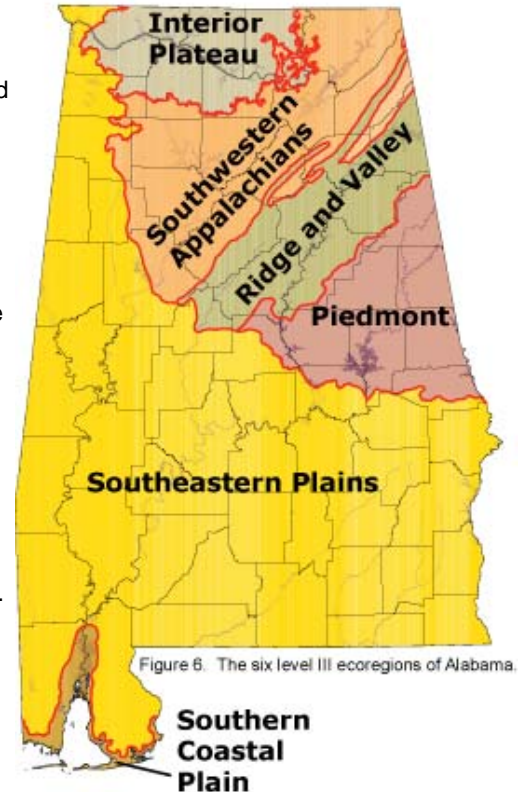


Figure 6. The six level III ecoregions of Alabama