National Fire Occurrence Database and GIS Coverage, Federal and State Lands, 1986-1996

Introduction

A coarse scale assessment and mapping effort was initiated as two associated projects under the responsibility of the Fire Modeling Institute at the Fire Sciences Laboratory, Rocky Mountain Research Station, in Missoula, Montana. The first project, called *"Fire Regimes for Fuels Management and Fire Use"*, began in 1997 through an agreement with USDA Forest Service, State and Private Forestry, and USDA Forest Service Aviation and Fire Management. The second project, now called *"Forests at Risk,"* was undertaken to add a fire-related component to the USDA Forest Service's "Ecosystems at Risk" project. Integration of these two efforts was subsequently adopted and funded by the Joint Fire Sciences Program, with specifications for development of several additional spatial data layers. This project has produced seven spatial data layers, each a continuous coverage for the conterminous United States. This document describes the development of one of these seven layers, the National Fire Occurrence Database and Geographic Information System (GIS) coverage for Federal and State Lands for the time period 1986-1996.

The National Fire Occurrence Database and GIS coverage includes federal data from the United States Department of Agriculture (USDA) Forest Service (USFS) and four Department of Interior agencies: Bureau of Land Management (BLM), Bureau of Indian Affairs (BIA), National Park Service (NPS), and U.S. Fish and Wildlife Service (FWS). It also includes non-federal data from all conterminous states but Nevada (Figure 1).

Federal Fire Occurrence Database

The federal database and GIS coverage consist of USDA Forest Service records from Regions 1 through 6, 8 and 9, and Department of Interior (DOI) fire records, including records from the Bureau of Land Management (BLM), Bureau of Indian Affairs (BIA), National Park Service (NPS), and U.S. Fish and Wildlife Service (FWS). Other federal agencies such as the Department of Defense, Bureau of Reclamation, and Department of Energy are not represented in this database.

US Forest Service Database

USDA Forest Service units enter data from Report 5100-29 into their local databases and electronically submit the data to the national database called the National Interagency Fire Management Integrated Database (NIFMID), located at the USDA National Information Technology Center in Kansas City, Missouri. Forest Service raw data were extracted from NIFMID for Forest Service regions covering the conterminous United States (Forest Service Regions 1-6, 8 and 9) for the years 1986-1996. An ARC/INFO coverage was generated from the latitude-longitude coordinates in the database and attributes were standardized to fit database items chosen for this project (Table 1).

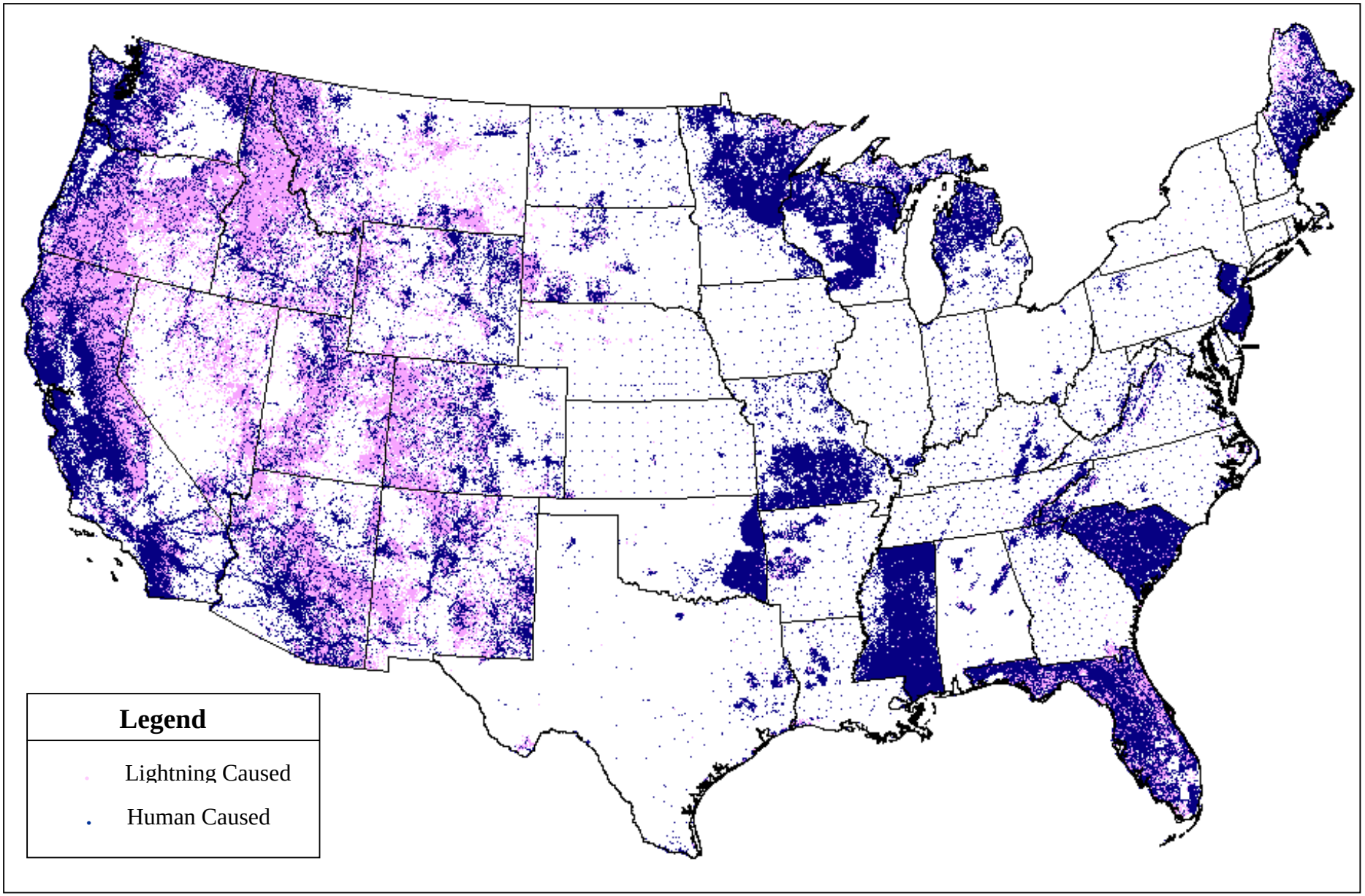

Figure 1. National Fire Occurrence, 1986-1996

Table 1. The National Fire Occurrence GIS database fields.

Field Name	Length	Type	Comments
UNIQUENUM	9	B	Unique number for each record
			State Records: State FIPS + FIRENUMBER
			Federal Records: Agency code + 2-digit year + FIRENUMBER
AGENCY	1	I	Federal Agency Codes:
			1 = BLM, Bureau of Land Management
			2 = BIA, Bureau of Indian Affairs
			3 = NPS, National Park Service
			4 = FWS, Fish and Wildlife Service
			5 = US Forest Service
FIRENUMBER	7	B	Numeric identifier within each state or agency
FIRENAME	30	C	Not always provided
YEAR	4	B	Year of fire (4 digit: 1986, 1987, etc)
MONTH_DISC	2	I	Month discovered (or comparable)
DAY_DISC	2	I	Day discovered (or comparable)
TIME_DISC	4	B	Time discovered (2400 clock)
MONTH_CONT	2	I	Month controlled (or comparable)
DAY_CONT	2	I	Day controlled (or comparable)
TIME_CONT	4	B	Time controlled (2400 clock)
ACRES_TOTAL	12	F	Allow for 2 decimals
CAUSE_STD	2	B	Standardized cause code with the following categories:
			1 = Lightning / 6 = Equipment Use
			2 = Campfire / 7 = Railroad
			3 = Smoking / 8 = Children
			4 = Debris Burning / 9 = Miscellaneous
			5 = Incendiary / 0 = Unknown
CAUSE2	2	I	Cause of fire reclassified as:
			1 = Lightning / natural cause
			2 = Human cause
			0 = Unknown or not reported
COUNTY	32	C	County name (for state records with county as best location)
STATE	20	C	State name (federal records)
DATA_SOURCE	5	C	Source of data recorded as state or agency abbreviation
			REG(1-6, 8, 9) = US Forest Service Region
			BLM = Bureau of Land Management
			BIA = Bureau of Indian Affairs
			NPS = National Park Service
			FWS = Fish and Wildlife Service
YEARSINDB	25	C	Years for which data are present, e.g. 1986-1996
LOC_SOURCE	14	C	Best location provided by state or agency, e.g. County, Legal-TRS (Township, Range, Section), Legal-TRSQQ (Township, Range, Section, Quarter, Quarter), UTM, GIS, Lat/Long
NUM_YEARS	3	B	Number of years provided in database, e.g. 11 if 1986-1996
STATUS	1	I	Item specifying status of data based on review by agency or state fire directors
			1 = Satisfactory / 2 = Unsatisfactory / 0 = Not reviewed
LONG_DD	8,18	F	Longitude in decimal degrees, 5 decimals
LAT_DD	8,18	F	Latitude in decimal degrees, 5 decimals

Department of the Interior Database

The Department of Interior Agencies, BIA, BLM, FWS, and NPS, submit data from the DOI Form-1202 to the common Shared applications Computer System, or SACS, located at the National Interagency Fire Center in Boise, Idaho. Initial Department of the Interior GIS layers complete with attributes were acquired from Susan Goodman of the BLM in January of 1998. One GIS layer was provided for each agency (FWS, BLM, BIA, and NPS). After sending data and maps out for review to DOI agency fire directors, it was determined that too many inconsistencies occurred between our GIS database and the agencies' databases, chiefly due to differences in fire type and acreage summaries. We therefore obtained new data directly from the DOI central database in October 1999 and worked closely with Andrea Olson of the FWS to summarize appropriate fire types and acreages. These new data were used in the final DOI product. An ARC/INFO coverage was generated from the databases' latitude-longitude coordinates, recorded in the database to the nearest second, and database items were standardized.

Processing of Federal Fire Occurrence Database

We performed several processing steps on both the USFS and DOI layers. The Forest Service and DOI layers were cleaned by removing records with incorrectly recorded latitude or longitude coordinates. Records from the USFS database were removed that contained data not needed for this analysis such as pre-1986 data and records of false alarms, assist fires, and prescribed burns. Records with unsuitable fire types were removed from the DOI database. In addition, a GIS layer of state boundaries was overlaid with the point coverages to identify those points that did not occur within the state recorded. If the point occurred further than ten kilometers from the nearest state boundary to which it was assigned or if the point occurred within ten kilometers of the state boundary but was not recorded as being in the adjacent state, it was removed from the GIS database (Figure 2).

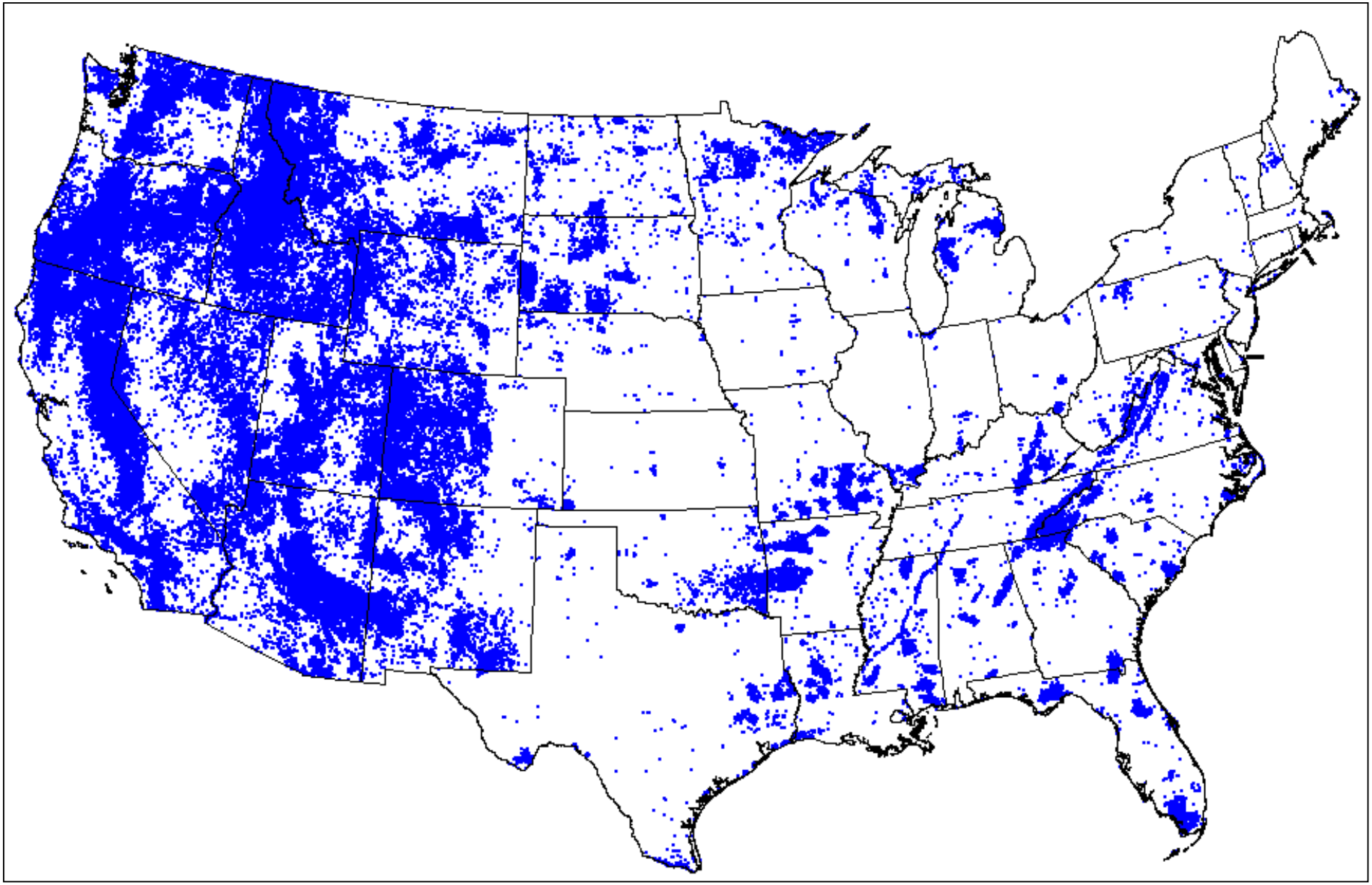

Figure 2. Fire Occurrence, Federal Records, 1986-1996

State Database

Fire records were requested from all lower 48 states (see Appendix A for state contacts). Some form of fire records were obtained for all states except for Nevada. The completeness of the data received varied by state. Many states did not have complete fire records for all of the years 1986 through 1996 (Table 2). In this case, we used whatever years were available if the data appeared complete for each year. A few states had years missing from the 1986-1996 time period but had complete data for 1997 in which case the 1997 data was included. The resolution of the location data also varied by state. States provided fire locations as GIS coverages, UTM or Latitude-Longitude coordinates, legal descriptions, or with a county as the finest location (Table 2). For nine states that were either unreachable or lacked digital fire data, data were obtained from the NFIRS database.

Processing of State Fire Database

We received state fire locations in a variety of formats. Fire records that were provided in a GIS format or with Latitude-Longitude or UTM coordinates were imported directly into the GIS. The fire locations recorded as legal descriptions were converted to point locations by processing them through an MS-DOS based conversion program (TRS2LL.exe) or through an Arc Macro Language (AML) conversion program (PLSFILE.AML and PLS2XY.AML). The TRS2LL.exe program converts township, range, and section to the corresponding latitude-longitude of the center of the section. The AMLs convert township, range, section, and if available, quarter, quarter section to the center of the section or quarter, quarter section. The AMLs require ARC/INFO polygon coverages of township, range, and section, otherwise known as Public Land Survey System (PLSS) coverages. State records that had county as the finest fire location were assigned the center of the county as the fire location.

Because of the multitude of location sources from which state data came, several editing steps were performed prior to inclusion into the final database and GIS layer. After the conversion programs were run on the states that provided legal descriptions, the coverages were compared to the original PLSS layer. If the township, range, and/or section disagreed between the point layer and the PLSS, the record was discarded. Next, the point coverages were compared to the state and county layers. If the county and/or state disagreed between the point layer and the state-county layer (outside of a 10 km buffer), then the record was discarded. These editing steps on the states that provided legal descriptions as the location source resulted in the deletion of between 0% (South Dakota) to 39% (Wyoming) (Table 2).

Of the state records that had county as the finest fire location, 0.3% of the records fell in counties that had no state or private ownership and were removed from the database. If the center of the county fell on federal land, the fire locations were moved to non-federal land within the county. Arkansas fire records were included in the county database even though legal descriptions were available. We did this because the PLSS layer used to convert the description to a point location was unavailable at the time of this project.

Attributes of state fire records were standardized to fit with this project's database design**.** All state cause codes were standardized as best as possible to fit those used by the federal agencies. Some states only had available date and time of dispatch or date and time fire was declared out. These fields were loosely interpreted to be date discovered and date controlled, respectively. Records were removed if they were not needed for this analysis such as pre-1986 data and records of false alarms and prescribed burns.

Two states were processed differently than the other states. We received fire records from Colorado in a GIS format, which contained both state and federal fires. It was impossible to trace the records to their original agency source. Therefore, the coverage was overlaid with an ownership layer and only those records falling on non-federal lands were kept as the state GIS coverage. Missouri provided fire records with both legal descriptions and county as the best location. Those records with legal descriptions were converted to the center of the section and appended to the state point coverage. Those with county as the best location were included in the county GIS database.

Table 2. State Fire Data Summary

State	Location Source	Years in Database	Number of Records in Original Database Received from State	Number of State Fires in Final Database	Percentage of Original Records in Final Database	Acres Burned per State in Final Database	Status*
Alabama	NFIRS	1987-88,1990-96	168	168	100%	Acres not reported	2
Arkansas	County	1989-1996	23,627	23,626	100%	275,669.00	0
Arizona	UTM	1986-1996	9,807	9,201	94%	633,635.13	0
California	GIS	1986-1996	132,594	101,144	76%	1,598,058.40	1,2+
Colorado	GIS	1986-1995	10,018	4,868	49%	123,452.80	0
Connecticut	County	1991-1997	1,358	1,358	100%	4,666.00	0
Delaware	NFIRS	1987-88,1990,1995-96	401	401	100%	Acres not reported	2
Florida	Legal-TRS**	1986-1996	55,299	51,519	93%	1,163,576.10	0
Georgia	County	1986-1996	92,213	91,935	100%	368,794.68	0
Iowa	NFIRS	1987-88,1990-96	378	378	100%	Acres not reported	2
Idaho	Legal-TRS	1986-89,1991-96	5,184	5,169	100%	580,452.80	0
Illinois	NFIRS	1987-88,1990-96	1,201	1,201	100%	Acres not reported	2
Indiana	County	1986-1996	14,098	14,004	99%	72,011.98	0
Kansas	County	1986-1996	74,933	74,933	100%	1,766,377.00	0
Kentucky	NFIRS	1987-88,1990-96	1,191	1,191	100%	Acres not reported	2
Louisiana	NFIRS	1987-88,1990-96	3,206	3,206	100%	Acres not reported	2
Massachusetts	County	1991-1997	33,484	33,484	100%	43,090.20	2
Maryland	County	1987-1992, 1994-1996	5,851	5,850	100%	38,914.10	0
Maine	Lat/Long	1986-1996	8,467	7,564	89%	23,698.57	0
Michigan	Legal-TRS	1986-1996	6,258	6,166	99%	56,514.50	1
Minnesota	Legal-TRS	1986-1996	18,807	18,482	98%	6,747,086.52	1
Missouri	Legal-TRS, County	1990-1997	22,061	20,986	95%	336,695.00	0
Mississippi	GIS	1988-1997	55,977	42,073	75%	574,824.00	0
Montana	Legal-TRS	1986-1996	4,682	4,467	95%	377,928.39	0
North Carolina	County	1986-1996	51,708	51,017	99%	1,075,320.00	0
North Dakota	County	1988-1996	3,102	3,087	100%	110,365.00	0
Nebraska	County	1987-1996	14,672	14,672	100%	598,099.00	0
Nevada	No State Records						
New Hampshire	NFIRS	1987-88,1990-96	1,484	1,484	100%	Acres not reported	2
New Jersey	Lat/Long	1986,1989-1995	11,975	11,237	94%	68,426.75	0
New Mexico	Legal-TRS	1986-1996	8,070	7,397	92%	1,219,364.19	0

New York	County	1986-1997	4,728	4,720	100%	43,684.00	0
Ohio	County	1993-1996	2,412	2,412	100%	14,777.50	0
Oklahoma	Legal-TRS	1989-1996	17,194	16,781	98%	511,613.00	0
Oregon	Legal-TRS	1986-1996	13,338	13,083	98%	261,247.31	0
Pennsylvania	County	1986-1992	9,128	9,124	100%	59,086.00	0
Rhode Island	NFIRS	1987-88,1990-95	335	335	100%	Acres not reported	2
South Carolina	Lat/Long	1988-1992	34,358	28,616	83%	153,080.00	0
South Dakota	Legal-TRS	1988-1996	382	382	100%	46,062.00	0
Tennessee	County	1993-1996	12,580	9,528	76%	90,227.50	0
Texas	County	1988-1993, 1995-1996	14,715	14,262	97%	263,277.00	0
Utah	Legal-TRS	1986-1996	5,529	4,891	88%	700,693.98	0
Virginia	County	1990-1992	4,167	4,167	100%	18,743.00	0
Vermont	County	1992-1996	942	942	100%	2,042.12	0
Washington	Legal-TRS	1986-1996	13,350	12,982	97%	209,427.70	0
Wisconsin	Legal-TRSQQ	1986-1996	19,385	19,197	99%	46,412.26	1
West Virginia	NFIRS	1987-88,1990-96	6,294	6,294	100%	Acres not reported	2
Wyoming	Legal-TRS	1991-1996	5,343	3,235	61%	182,044.75	0

* Status Codes: 1 = Satisfactory, 2 = Unsatisfactory, 0 = Not reviewed

** TRS is Township, Range, Section; TRSQQ is Township, Range, Section, Quarter, Quarter

+ Data for years 1987, 1991, 1993, and 1996 were given an “unsatisfactory” in the review.

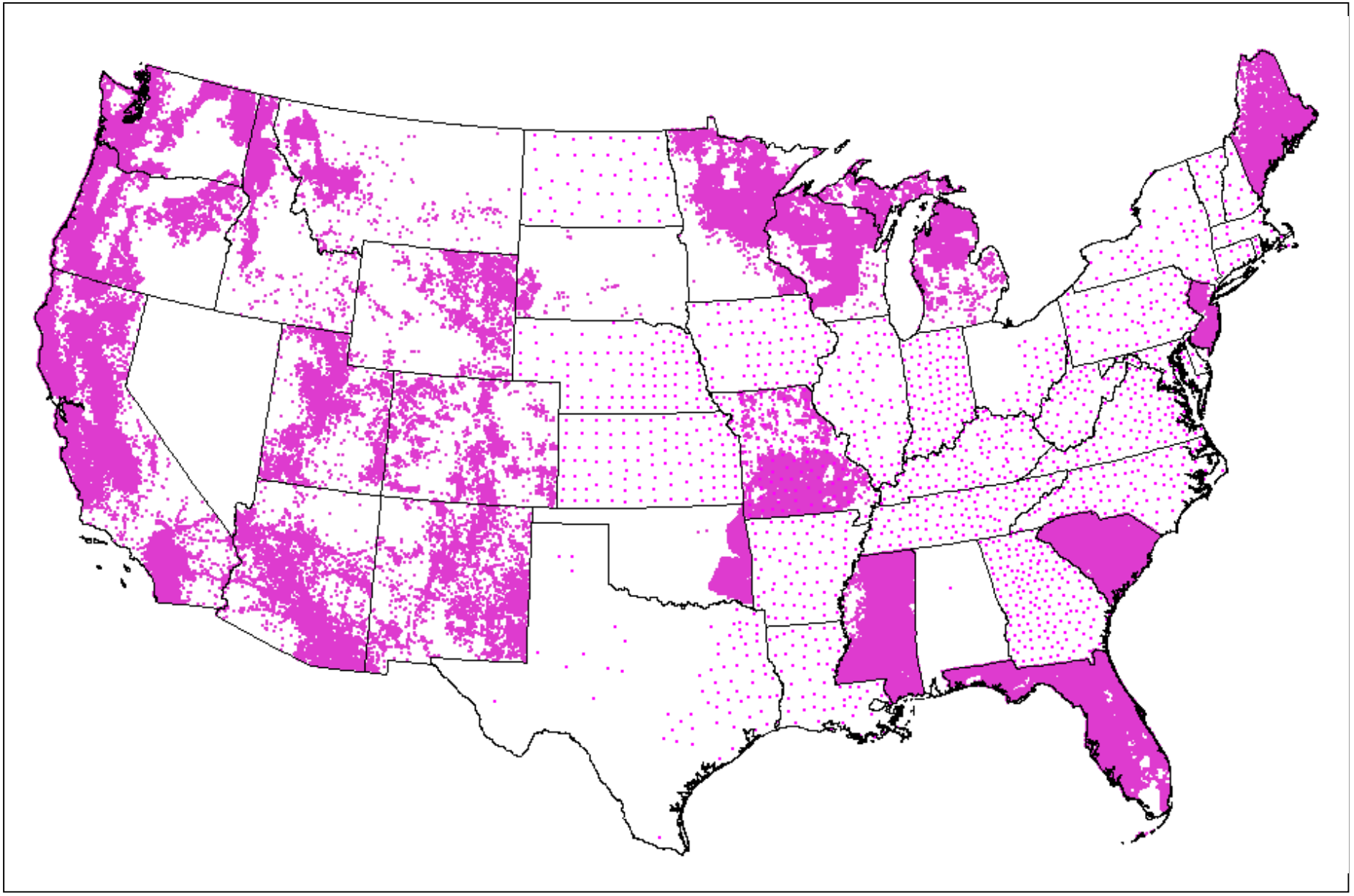

Figure 3. Fire Occurrence, Non-federal Records, 1986-1996 (not all years are represented)

Table 3. State fire data completeness.

State	Number of State Fires in Final Database	Fire Name	Month Discovered	Day Discovered	Time Discovered	Month Contained	Day Contained	Time Contained	Acres	Cause of Fire
Alabama	168	N	Y	Y	N	N	N	N	N	Y
Arkansas	23,626	N	Y	Y	Y	N	N	N	Y	Y
Arizona	9,201	N	Y	Y	Y	Y	Y	Y	Y	Y
California	101,144	N	Y	Y	Y	Y	Y	Y	Y	Y
Colorado	4,868	N	Y	Y	N	N	N	N	Y	Y
Connecticut	1,358	N	Y	Y	Y	N	N	N	Y	Y
Delaware	401	N	Y	Y	N	N	N	N	N	Y
Florida	51,519	N	Y	Y	Y	Y	Y	Y	Y	Y
Georgia	91,935	N	Y	Y	Y	Y	N	N	Y	Y
Iowa	378	N	Y	Y	N	N	N	N	N	Y
Idaho	5,169	Y	Y	Y	Y	Y	Y	Y	Y	Y
Illinois	1,201	N	Y	Y	N	N	N	N	N	Y
Indiana	14,004	N	Y	Y	N	N	N	N	Y	Y
Kansas	74,933	N	Y	Y	Y	N	N	N	Y	Y
Kentucky	1,191	N	Y	Y	N	N	N	N	N	Y
Louisiana	3,206	N	Y	Y	N	N	N	N	N	Y
Massachusetts	33,484	N	Y	Y	Y	N	N	N	Y	Y
Maryland	5,850	N	Y	Y	N	N	N	N	Y	Y
Maine	7,564	Y	Y	Y	Y	Y	Y	Y	Y	Y
Michigan	6,166	N	Y	Y	Y	Y	Y	Y	Y	Y
Minnesota	18,482	N	Y	Y	Y	Y	Y	Y	Y	Y
Missouri	20,986	N	Y	Y	Y	Y	Y	Y	Y	Y
Mississippi	42,073	N	Y	Y	Y	N	N	Y	Y	Y
Montana	4,467	Y	Y	Y	Y	Y	Y	Y	Y	Y
North Carolina	51,017	Y	Y	Y	Y	Y	Y	N	Y	Y
North Dakota	3,087	N	Y	Y	N	N	N	N	Y	Y
Nebraska	14,672	N	Y	Y	N	N	N	N	Y	Y
Nevada	No State Records									
New Hampshire	1,484	N	Y	Y	N	N	N	N	N	Y
New Jersey	11,237	N	Y	Y	N	N	N	N	Y	Y
New Mexico	7,397	Y	Y	Y	Y	Y	Y	Y	Y	Y
New York	4,720	Y	Y	Y	N	Y	Y	N	Y	Y

Ohio	2,412	N	Y	Y	N	N	N	N	Y	Y
Oklahoma	16,781	N	Y	Y	Y	Y	Y	Y	Y	N
Oregon	13,083	N	Y	Y	Y	Y	Y	Y	Y	Y
Pennsylvania	9,124	N	Y	Y	N	N	N	N	Y	Y
Rhode Island	335	N	Y	Y	N	N	N	N	N	Y
South Carolina	28,616	N	Y	Y	N	N	N	N	Y	Y
South Dakota	382	Y	Y	N	N	N	Y	Y	Y	Y
Tennessee	9,528	Y	Y	Y	Y	Y	Y	Y	Y	Y
Texas	14,262	N	Y	Y	Y	N	N	Y	Y	Y
Utah	4,891	N	Y	Y	N	N	N	N	Y	Y
Virginia	4,167	N	Y	Y	N	N	N	N	Y	Y
Vermont	942	N	Y	Y	Y	N	N	N	Y	Y
Washington	12,982	N	Y	Y	Y	Y	Y	Y	Y	Y
Wisconsin	19,197	N	Y	Y	Y	Y	Y	Y	Y	Y
West Virginia	6,294	N	Y	Y	N	N	N	N	N	Y
Wyoming	3,235	N	Y	Y	N	N	N	N	Y	Y

Potential Problems with the National Fire Occurrence Database

While the federal database is represented for the full eleven years of the time period 1986-1996, several states have years missing from this time period (Table 2). Also missing from some state records are some of the required fields such as fire name, date of control, cause and, in the case of records from the National Fire Incident Report System (NFIRS) database, acres burned (Table 3). Several states did not send spatially complete databases, with some counties having few or no fire records, such as Alabama, Oklahoma, Texas, and Ohio (Figure 3). We were unable to obtain any non-federal records for Nevada.

Duplicate state and federal records for the same fire may exist in the databases. Fires on federal land may also be recorded by the state (Bunton, 1999). Because fire locations are generally very course and not all database fields that could aid in tracking duplicates are fully populated, it was virtually impossible to track fires duplicated between the federal and state databases.

We did not edit fire records (with the exception of county records falling in counties with exclusively federal ownership) for ownership inconsistencies. We determined that the ownership layer we had available had a scale inconsistent with the fire location coverages and could not be used for editing purposes.

While problems like different cause codes or absence of key data fields can be documented, it is not known to what extent wildland fires from states' urban and rural jurisdictions go unreported. Fires from volunteer rural firefighting organizations may not be reported to a centralized agency such as State Fire Marshals or State Foresters. For instance, the Forestry Division of Montana's Department of Natural Resources located in western Montana, rarely receives fire reports from central or eastern Montana fire departments. This tendency of under-reporting may explain the relative absence of fires in all but the eastern-most portion of Oklahoma (Figure 3).

For the states from which we did not receive data directly, records were obtained from the NFIRS database. Because participation in NFIRS is voluntary, the database does not represent all wildland fires within the state within a given time period. After four state summaries with NFIRS data were reviewed by state foresters, namely Kentucky, Louisiana, Alabama, and West Virginia (Table 4), all states with NFIRS records were determined to be inadequate representations of state fires and were given a status of 2 (unacceptable) (Table 4).

Table 4. NFIRS fire data and State Foresters' review data, 1987-1996 summaries.

	NFIRS		State Reviews	
State	Total Number of Fires	Total Acres	Total Number of Fires	Total Acres
Alabama	168	Not reported	51,973	586,208
Kentucky	1,191	Not reported	16,903	668,813
Louisiana	3,206	Not reported	43,362	535,631
West Virginia	6,294	Not reported	12,720	971,664

Conclusions

Collecting, compiling, and summarizing national fire occurrence data was a time-consuming and often difficult process. Multiple requests of state agency representatives were often necessary before data were received. Once data were received, pre-GIS processing time was extensive because of the wide variety of formats received. GIS processing time was also extensive given the assortment of location types we received. Individual states' database editing may be an ongoing process, as was the case with California,

rendering the data obsolete a year after receiving it. Once data were incorporated into the GIS, further review and processing were necessary before appropriate data summaries were acceptable, as was the case with Department of Interior data. Despite the time invested in acquiring and synthesizing data, inconsistencies still exist, primarily because most fire data are managed as databases, not as GIS databases. Until fire reporting is standardized and mandatory for all jurisdictions, this type of product will have its limitations as to the dependability and usefulness of the data as an exact representation of fire occurrence, but it can be used to illustrate trends in fire occurrence.

Bibliography

Bunton, Delvin R. 1999. Sharing information through fire reporting. Fire Management Notes, 59(2): 37-42.

Appendix A. Contacts for state fire database.

CONTACT	DATE	TITLE	DEPARTMENT	ADDRESS	CITY	ST	ZIP	PHONE
Doug Akin	8/28/98		Arkansas Forestry Commission	3821 West Roosevelt Rd	Little Rock	AR	72204	501-296-1940
Cliff Pearlberg	7/29/98		Fire Management Division	2901 West Pinnacle Peak Rd	Phoenix	AZ	08027-1002	602-255-4059
Steve Dunlap	8/11/98		Dept. of Forestry & Fire Protection	P.O. Box 944246	Sacramento	CA	94244-2460	916-653-5341
Bill Graepler	7/27/98	Assistant Staff Forester	State Forest Service, Fire Division	Forestry Building, CSU	Fort Collins	CO	80523-5060	970-491-6303
Don Smith			State Department of Forestry	79 Elm Street	Hartford	CT	06106	860-424-3630
Charley Curtius	8/20/98	Assistant Project Analyst	Dept. of Agriculture & Conservation	Mayo Bldg. – Rm B11	Tallahassee	FL	32399-0800	850-488-5796
Robert Carswell	8/20/98		Georgia Forestry Commission	P.O. Box 819	Macon	GA	31202-0819	912-751-3477
Mike Dananberg	7/24/98		Dept. of Lands, Fire Bureau	3802 Industrial Avenue	Coeur d'Alene	ID	83815	208-769-1522
Steve Creech	8/17/98	State Fire Coordinator	Fire Control Headquarters	6220 Forest Road	Martinsville	IN	46151	765-342-4701
John Weckerling	8/25/98		State Fire Marshall Department	700 SW Jackson Street	Topeka	KS	66603-3714	785-296-4198
George Houghton		District 5 Fire Warden	DEM, Division of Forests & Parks	Asbury Street	Topsfield	MA	01983	978-887-5931
Alan Zentz			Department of Natural Resources	Tawes State Office Bldg E-1	Annapolis	MD	21401	410-260-8503
Ed Jones	8/25/98		Forest Fire Control Division	RR1, Box 650, Bolton Hill	Augusta	ME	04330	207-287-2275
Donald J. Johnson	8/25/98	Fire Prevention Specialist	Forest Management Division	P.O. Box 30028	Lansing	MI	48909-7528	517-335-3348
Barb Meyer			Minnesota Interagency Fire Center	402 11th Street SE	Grand Rapids	MN	55744	218-327-4570
Holly Foster	8/17/98	Administrative Secretary	Dept. of Conservation, Forestry Division	P.O. Box 180	Jefferson City	MO	65102-0180	573-751-4115
Randel Romedy		Resource Analyst	Division of Forest Management	301 N. Lamar St., Suite 300	Jackson	MS	39201	601-359-2823
Ray Nelson	7/21/98		DNRC – Forestry Division	2705 Spurgin Road	Missoula	MT	59801	406-542-4267
Gary Curcio			NC Division of Forest Resources	2958 Rouse Road Extension	Kinston	NC	28504-7320	252-520-2402
Linda Hippen	8/25/98		State Fire Marshal's Office	P.O. Box 1054	Bismarck	ND	58501-0560	701-328-5555
Donald E. Westover	8/17/98	Assistant State Forester-Protection	Dept. of Forestry, Fisheries & Wildlife	105 Plant Industry Building	Lincoln	NE	68583-0814	402-472-6629
C. Bertram Plante	9/3/98	Assistant Division Fire Warden	Bureau of Forest Fire Management	P.O. Box 404	Trenton	NJ	08625-0404	609-292-2977
Frank Smith	8/26/98	Chief of Fire Management	EMNR – Forestry Division	P.O. Box 1948	Santa Fe	NM	87504-1948	505-827-5838
Jo Zeglen		Captain	NYSDEC	50 Wolf-Rm 440C	Albany	NY	12233-2560	518-457-5740
Nathan Kirk		Fire/Law Coordinator	ODNR – Division of Forestry	1855 Fountain Square Court	Columbus	OH	43224-1327	614-265-6711
Jay Graham			Data Processing	2800 N. Lincoln Blvd	Oklahoma City	OK	73105-4298	405-521-3864
James A. Coyle	8/17/98	Protection Specialist	Oregon Dept. of Forestry	2600 State Street	Salem	OR	97310	503-945-7436
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States fire reports unavailable in digital format at time of request or <2yrs during 1886 - 1996 study period.

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