

Louisiana Black Bear Post-Delisting Monitoring



4th Annual Report
2019

Monitoring Team Cooperators:

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U.S. Fish and Wildlife Service (Service) – Louisiana Ecological Services Office (LESO)

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This annual report is available on the web at:
<https://www.fws.gov/southeast/lafayette/endangered-species-and-recovery/>

Introduction

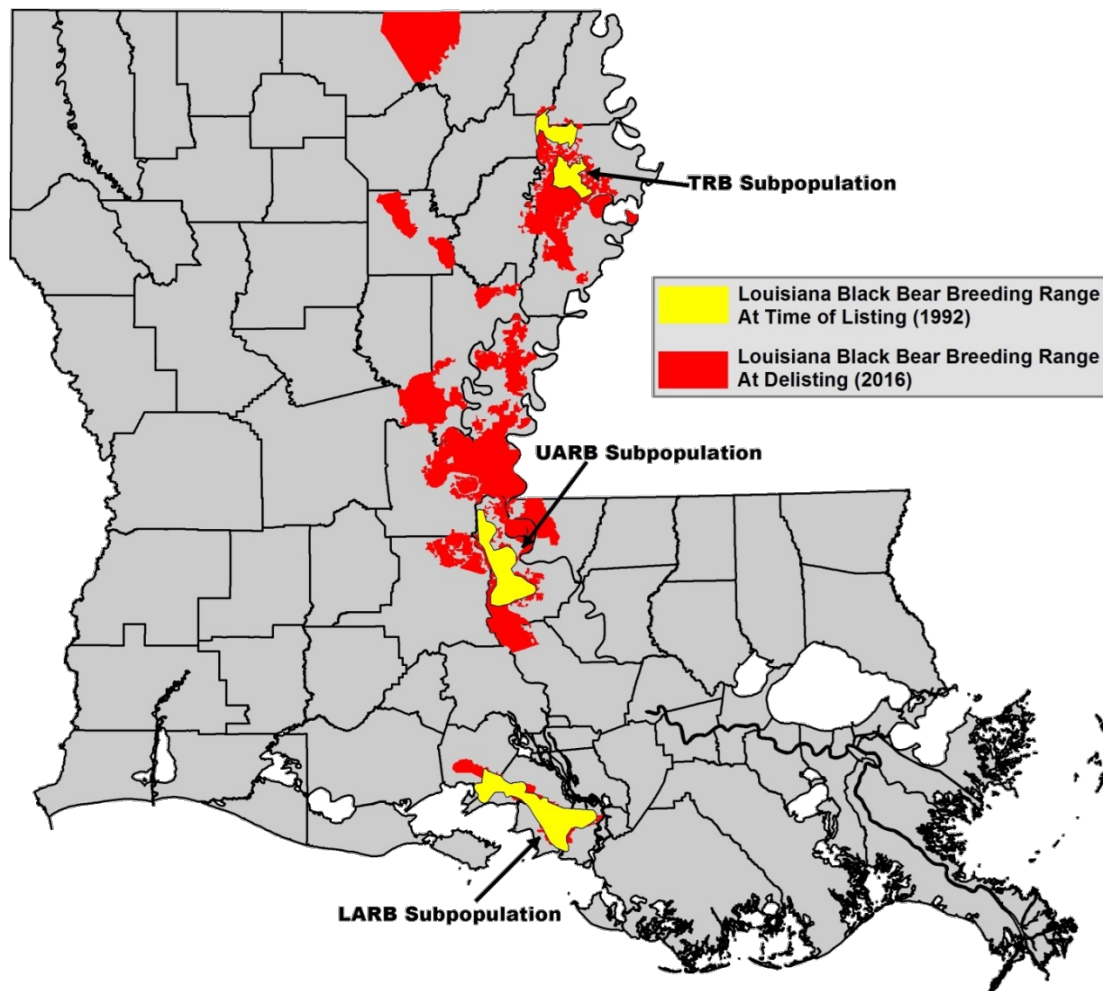
This report provides information on the fourth year of post-delisting monitoring efforts conducted for the recovered Louisiana black bear from April 1, 2018, through March 31, 2019, and the most current assessment of the species status, as in accordance with Section 4(g)(1) of the Endangered Species Act (ESA) of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.). Appendix II of this report provides information on modifications we made to a portion of our habitat analysis methodology during the reporting period.

The Louisiana black bear is one of 16 subspecies of the American black bear. It historically inhabited the forests of Louisiana, southern Mississippi, and eastern Texas; but extensive land clearing, mainly for agricultural purposes, reduced its habitat by more than 80 percent. Section 3 of the ESA describes a threatened species as one likely to become endangered within the foreseeable future and an endangered species as one that is in danger of extinction. The Service once listed the Louisiana black bear as a threatened species; however, the species has been delisted because the use of available conservation tools and measures have led the species to recovery, which is the point where protections of the ESA are no longer necessary.

The Louisiana black bear was listed as threatened on January 7, 1992, due to the reduction in population size resulting from extensive habitat loss and fragmentation, reduction in habitat quality, and human-associated mortality (57 FR 588). Simultaneously, other sub-species of free-living black bears within the historic range of the Louisiana black bear were listed as threatened due to their “similarity of appearance” to the Louisiana black bear. On March 10, 2009, the Service published a final rule in the Federal Register (74 FR 10350) designating 1,195,821 acres of critical habitat for the Louisiana black bear.

At the time of listing, the Louisiana black bear was restricted to core subpopulations in the Tensas River Basin (TRB subpopulation), the upper Atchafalaya River Basin (UARB subpopulation), and the portion of the lower Atchafalaya River Basin found in coastal St. Mary and Iberia Parishes (LARB subpopulation). After more than two decades of management, the Service officially removed the Louisiana black bear from the List of Endangered and Threatened Species and withdrew critical habitat designation on March 11, 2016 (81 FR 13124), following a status review indicating that threats to the species have been eliminated or reduced, adequate regulatory mechanisms exist, and subpopulations are stable such that the species is not currently, and is not likely to again become, a threatened species within the foreseeable future in all or a significant portion of its range.

The Service and state resource management agencies have latitude in determining the post-delisting monitoring activities that are necessary and appropriate. The Service and the LDWF published a plan to extensively monitor the status of the Louisiana black bear for 7 years following its delisting, which exceeds the 5-year minimum post-delisting monitoring period specified in Section 4 (g)(1) of the ESA. The ongoing post delisting monitoring of the Louisiana black bear serves to detect potential population decreases, new threats, or threat increases that may warrant the implementation of protective measures to ensure that the Louisiana black bear remains secure from risk of becoming a threatened or endangered species.



Results/Conclusions

LDWF Bear Sighting Data

LDWF personnel recorded 101 sightings and 128 bear-related complaints during the current reporting period (April 1, 2018 – March 31, 2019). Additional information regarding LDWF's bear incident reporting data can be found in Appendix I.

Radio Telemetry

Radio telemetry analysis includes known-fate survival data and cub/yearling recruitment data gathered in the post-delisting monitoring period (2013-March 31, 2019). The annual female survival rate averaged 0.949 for the TRB subpopulation, 0.875 for the UARB subpopulation and 0.892 for the TRC subpopulation (regardless whether lost signals were assumed to be dead or live bears). A more detailed description of the analysis and results is provided in Appendix I.

Capture-Mark-Recapture (CMR; Hair-Snare)

Capture-mark-recapture (CMR; hair-snare) data was gathered during the summers, typically June, of 2013 - 2018. The rationale for using a 5-year average is provided on page 4 of our first annual PDM (2016 Report). For the TRB subpopulation, apparent female survival rate was 0.903 based on the random effects model. For the UARB subpopulation, apparent female survival rate was 0.898 based on the random effects model. This number is slightly below the threshold of 0.90. This is believed to be related to illegal mortalities in female collared bears. A more detailed description of the analysis and results is provided in Appendix I.

Habitat Analysis

Permanently Protected Lands

From 2014 to the March 31, 2019, there has been a net addition of over 12,200 acres of permanently protected lands (National Wildlife Refuges/Wildlife Management Areas/Wetland Reserve Program Perpetual Easements/Compensatory Wetland Mitigation Banks) within the Louisiana black bear habitat restoration planning area (HRPA). Over the past year there was a change of -3,840 acres, mainly in Wetland Reserve Program Perpetual Easements, due to several easements that occur on National Wildlife Refuges or Wildlife Managements Areas that were counted twice due to spatial overlap. A more detailed description of all habitat analyses is provided in Appendix II.

OVERALL CONCLUSION

Bear sighting and radio telemetry data for our analysis period appear typical and are similar to that of previous monitoring periods, suggesting that no new or increasing threats are impacting the subpopulations. CMR data indicate that there is a high probability of long-term persistence ($\geq 95\%$) for the TRB and UARB subpopulations. Our analysis of permanently protected lands in the vicinity of breeding subpopulations indicates that bear habitat is stable to increasing. Based on the analyses described above, we conclude that all Category I standards, as described in Section IV of the PDM Plan, have been achieved for the fourth annual monitoring period (for the fourth straight year) - indicating that the "Louisiana black bear metapopulation (group of populations that are separated by space but consist of the same species) remains secure without ESA protections."

Appendix I. Field Data Analysis and Results

Prepared By:

Louisiana Department of Wildlife and Fisheries



U.S. Geological Survey - Southern Appalachian Research Branch
University of Tennessee



POPULATION MONITORING FIELD ACTIVITIES

This report contains all population monitoring activities from April 1, 2017 – March 31, 2019. We live-captured bears and outfitted these individuals with VHF or VHF-GPS radio-collars, or marked bears based on sex and age class. Using monthly aerial telemetry, we monitored 49 radio-collared bears (1M; 48F) from all four subpopulations. We conducted our twelfth consecutive year of non-invasive hair trapping in the Tensas River and Upper Atchafalaya River basin subpopulations during May-July 2018. Samples were collected from 209 and 116 sites in both subpopulations, respectively, resulting in 4,207 hair samples. All hair snare season samples combined with live capture and mortality samples (total: 4,207) were sent to Wildlife Genetics International (WGI). To collect information on reproductive vital rates, we conducted adult female den visits across all four subpopulations during February-March, 2019 to count and mark cubs-of-the-year, and to count yearlings. From these efforts, we estimated an average litter size of 2.2 cubs for the metapopulation. Adult female collars were changed as necessary. We continued carcass recovery (marked and unmarked bears) and documented 50 mortalities from all causes during the reporting period. Roadkill remains the leading cause of documented mortality (70%). The Beartrak database was routinely updated and we logged 101 sightings and 128 complaints during this reporting period. All complaints received a response as detailed in the LDWF Louisiana black bear Management Plan.

MONITORING PROTOCOLS

Thresholds or tipping points are commonly used to indicate when vulnerabilities to extinction change which can trigger conservation actions. Laufenberg et al. (2017) performed a reanalysis of black bear capture-mark-recapture (CMR) data from 2006 to 2012 from the Upper Atchafalaya River Basin (UARB) to identify demographic parameters that were good predictors of extinction risk and to quantify thresholds useful for estimating probability of extinction. Conditional classification trees indicated that annual apparent survival rates (ϕ) >0.90 based on CMR data for adult females averaged over 5 years were reliable for predicting likelihoods of population persistence $>95\%$ for 100 years. This protocol was adopted for the 2017 report and for this report applies to CMR data collected at UARB and Tensas River Basin (TRB). Although we had to include 1 year of data from the population viability analysis (PVA) period (Laufenberg et al. 2016) to produce a 5-year average in 2017, the 2019 report is based wholly on post-PVA data. Other parameter estimates (e.g., finite population growth, survival from telemetry, fecundity) from UARB and TRB and estimates from the Three Rivers Complex (TRC) are reported for purposes of complementing and supporting the CMR data.

CAPTURE-MARK-RECAPTURE DATA

The capture-mark-recapture data to be analyzed consisted of bear DNA extracted from hair collected at barbed-wire sampling sites at TRB from 2006 to 2018 and at UARB from 2007 to 2018. The data were reformatted and analyzed as a Pradel robust design framework in Program Mark (White and Burnham 1999).

Based on a random effects model for females with ϕ over the past 5 years modeled as a constant $\{\phi(\text{sex} \times 5\text{yearaverage}), \text{psigma}(\text{sex} \times \text{year}), \text{p}(\text{sex} + \text{c} + \text{year})\}$, ϕ at TRB was 0.903 (95% CI = 0.852–0.938). Based on a similar random effect model at UARB $\{\phi(\text{sex} \times 5\text{yearaverage}), \text{psigma}(\text{sex} \times \text{year}), \text{p}(\text{sex} + \text{c} + \text{year})\}$, ϕ for females averaged over the past 5 years was 0.898 (95%

CI = 0.824–0.943). The UARB estimate was at or slightly below the minimum threshold of 0.90 suggested by Laufenberg et al. (2017).

Population growth rate (λ) was estimated for the past 5 (2014–2018) years by taking the geometric mean of annual estimates from the random effects model above. Realized growth rates were 1.010 (95% CI = 0.702–1.453) at TRB and 1.014 (95% CI = 0.684–1.504) at UARB (Clark, Davidson Annual Data Report 2020).

RADIO-TELEMETRY DATA

Survival – The radio telemetry data consisted of known-fate survival data from 2002-03 to 2018-19. Although Dr. Clark averaged survival rates over the past 5 years, data from previous years were needed to develop complete capture histories. The objective was to use known-fate analysis in Program MARK to estimate annual survival rates (White and Burnham 1999). Survival rates (S) were annual rates beginning on 1 April (approximate date of den exit) to 31 March of the following year. The models were based on the assumption that every bear was radio-located monthly. Entries were censored only if the bear was not detected for >4 months. Annual survival rates were estimated using 2 alternative methods. First, Dr. Clark censored animals whose collars ceased to function (S_{AA} or assumed alive). Second, Dr. Clark assumed those animals died at the time of signal loss (S_{AD} or assumed dead). This resulted in both optimistic (S_{AA}) and pessimistic (S_{AD}) estimates of survival. The study areas consisted of the Tensas River Basin (TRB), Upper Atchafalaya River Basin (UARB), and Three Rivers Complex (TRC).

Annual survival rates for 35 females at TRB monitored over the past 5 years were identical, assuming lost signals were alive (S_{AA}) and assuming lost signals were mortalities (S_{AD}), averaging 0.949 (95% CI = 0.871–0.981) over the previous 5 years. Eighteen females were monitored at UARB and S_{AA} and S_{AD} were both 0.875 (95% CI = 0.744–0.942) over the past 5 years. At TRC, 26 females were monitored and S_{AA} and S_{AD} were similar, S_{AA} averaging 0.892 (95% CI = 0.775–0.950) and S_{AD} averaging 0.891 (95% CI = 0.744 - 0.950) over the past 5 years.

Thirteen males were monitored over the past 5 years at TRC and S_{AA} and S_{AD} were 0.881 (95% CI = 0.604–0.969) and 0.826 (95% CI = 0.556–0.940) over the past 5 years, respectively. Two males were monitored at UARB and S_{AA} and S_{AD} were identical at 1.000 (95% CI = 1.000–1.000) over the past 5 years. Only 1 male was monitored at TRB and S_{AA} and S_{AD} were 1.000. Numerical convergence was suspect for the male data set, probably because of low sample sizes.

Fecundity and Population Growth – The proportions of the radiocollared females that were in 1 of 3 reproductive states: no cubs ($P_{no\ cubs}$), with cubs (P_{cubs}), and with yearlings ($P_{yearlings}$) were estimated with a Bayesian formula, assuming that the collared females were representative of adult females in the population. Cub and yearling litter sizes and cub and yearling fecundity rates were similarly estimated. Modes of posterior distributions and 2.5% and 97.5% credible intervals are reported. Dr. Clark then used those data to estimate per capita recruitment or fecundity.

On TRB, cub fecundity (f_{cub}), or the number of female yearlings annually produced per breeding age female, averaged 0.412 (95% CI = 0.218–0.554) and yearling fecundity ($f_{yearling}$) averaged

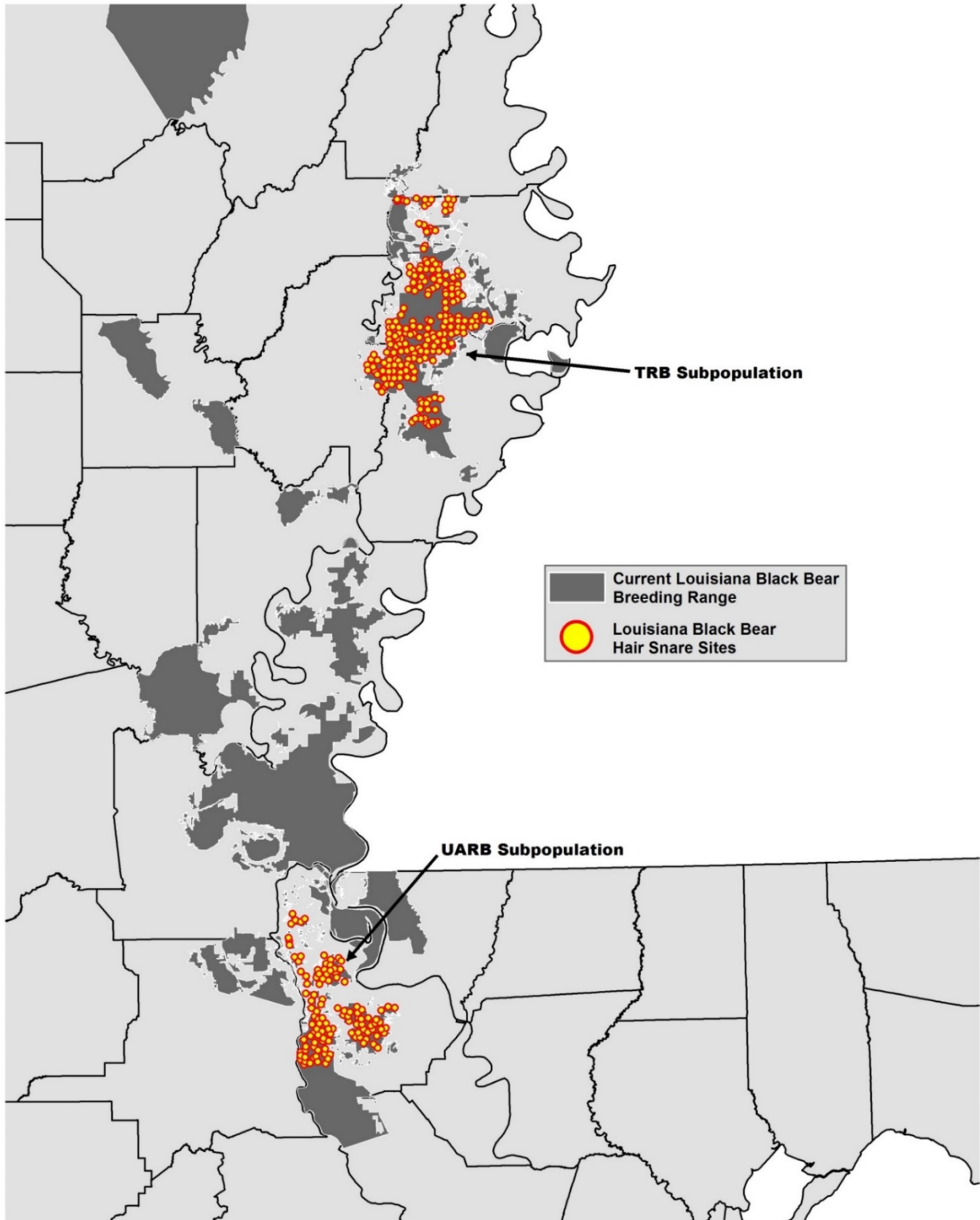
0.280 (95% CI = 0.018–0.434) over the past 5 years. On UARB, f_{cub} averaged 0.322 (95% CI = 0.030–0.574) and yearling fecundity ($f_{yearling}$) averaged 0.184 (95% CI = 0.016–0.361) over the past 5 years. On TRC, f_{cub} averaged 0.465 (95% CI = 0.234–0.659) and yearling fecundity ($f_{yearling}$) averaged 0.262 (95% CI = 0.119–0.413) over the past 5 years. Realized population growth rate (λ) over the past 5 years, estimated by adding the Bayesian-derived survival rate and $f_{yearling}$, at TRB, UARB, and TRC were 1.179 (95% CI = 0.982–1.354), 1.058 (95% CI = 0.860–1.256), and 1.152 (95% CI = 0.958–1.320), respectively. As before, growth rate estimates from telemetry were generally higher than estimates from the CMR data (though 95% CIs were wide), largely because of higher $f_{yearling}$ from the telemetry data compared with f estimated with the CMR data. Estimates of $f_{yearling}$ were based on counts of yearlings that had not yet emerged from winter dens with their mothers. These estimates of fecundity were probably higher because mortality and emigration that may have occurred between den emergence and future capture in hair snares is accounted for in the CMR estimates but not the telemetry estimates. The female bear populations at TRB and UARB over the past 5 years are probably best characterized as stable.

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Map of Louisiana black bear hair snare locations.



Appendix II. Habitat Analysis and Results

Appendix II

Prepared By:

U.S. Fish and Wildlife Service – Louisiana Ecological Services



Habitat Monitoring

Monitoring Changes in Permanently Protected Lands

Annual updates were obtained for state and federally owned wildlife managed lands, privately owned mitigation banks, and permanent easement enrollments in the U.S. Department of Agriculture – Natural Resources Conservation Services (USDA-NRCS) Wetland Reserve Program (WRP), all of which occur in the Louisiana black bear habitat restoration planning area (HRPA). These datasets were verified for accuracy, acreages were summarized, and their spatial locations depicted using geographic information systems (GIS) ArcGIS 10.6.1 (ESRI, Redlands, California, USA).

From 2014 to the end of 2019, there has been an addition of over 12,200 acres of permanently protected lands (NWR/WMA/WRP/MB) within the HRP. From April 1, 2018 to March 31, 2019 the acreage changes are as follows:

- Addition of + 560 acres in the Service's National Wildlife Refuge system within the HRP.
- No acreage changes are reported within the LDWF Wildlife Management Areas within the HRP.
- Decrease of - 113 acres reported from the RIBITS system (see information on this system below) within the U.S. Army Corps of Engineers (Corps) mitigation bank system within the HRP.
- Apparent decrease of - 4,286 acres of easements within the HRP in the USDA-NRCS WRP due to clarification of formerly inaccurate acreage reporting. The decline is apparent through the clarification of the acreage reported on paper and not an actual loss of the protected acreage within the HRP. This is mostly due to several WRP easements occurring on either NWR or WMA lands that were counted twice due to spatial overlap. For many years, as part of the role on wetland mitigation banking interagency review teams in multiple Corps districts, the Service's office maintained a GIS database of all proposed, pending, and approved wetland mitigation banks in Louisiana. That database was based upon freehand-digitized polygons derived from hard copy maps provided by the Corps or prospective mitigation bank developers (accuracy was somewhat limited due to inherent human errors and variability among digitizers). More recently, the Corps developed, and continues to maintain, a web-based system for tracking wetland mitigation banks throughout the Nation (called RIBITS – Regulatory In lieu fee and Bank Information Tracking System – <https://ribits.usace.army.mil>). The RIBITS system uses point data, not polygons, for its graphic displays and provides exact acreages in accompanying documentation (which are primarily calculated by official land surveys). Because of this increased accuracy, the fact that it has now been in use for several years, and that is the official wetland mitigation banking tracking system for the agency charged with administering the wetland regulatory program (the Corps), we have decided to discontinue maintenance and use of the Service's internal tracking system. Furthermore, we recently discovered that the Service's unofficial, internal tracking system erroneously contained proposed wetland mitigation banks that were rejected or withdrawn, yet not removed from our database. From this report forward, we will rely solely on RIBITS to evaluate changes in wetland mitigation banking acreage in the Louisiana black bear HRP. Again, it should be noted that the *apparent* decrease in

WRP acreage shown in the following tables is not an *actual* decrease; it is strictly due to spatial overlap resulting in duplicate acres being previously reported.

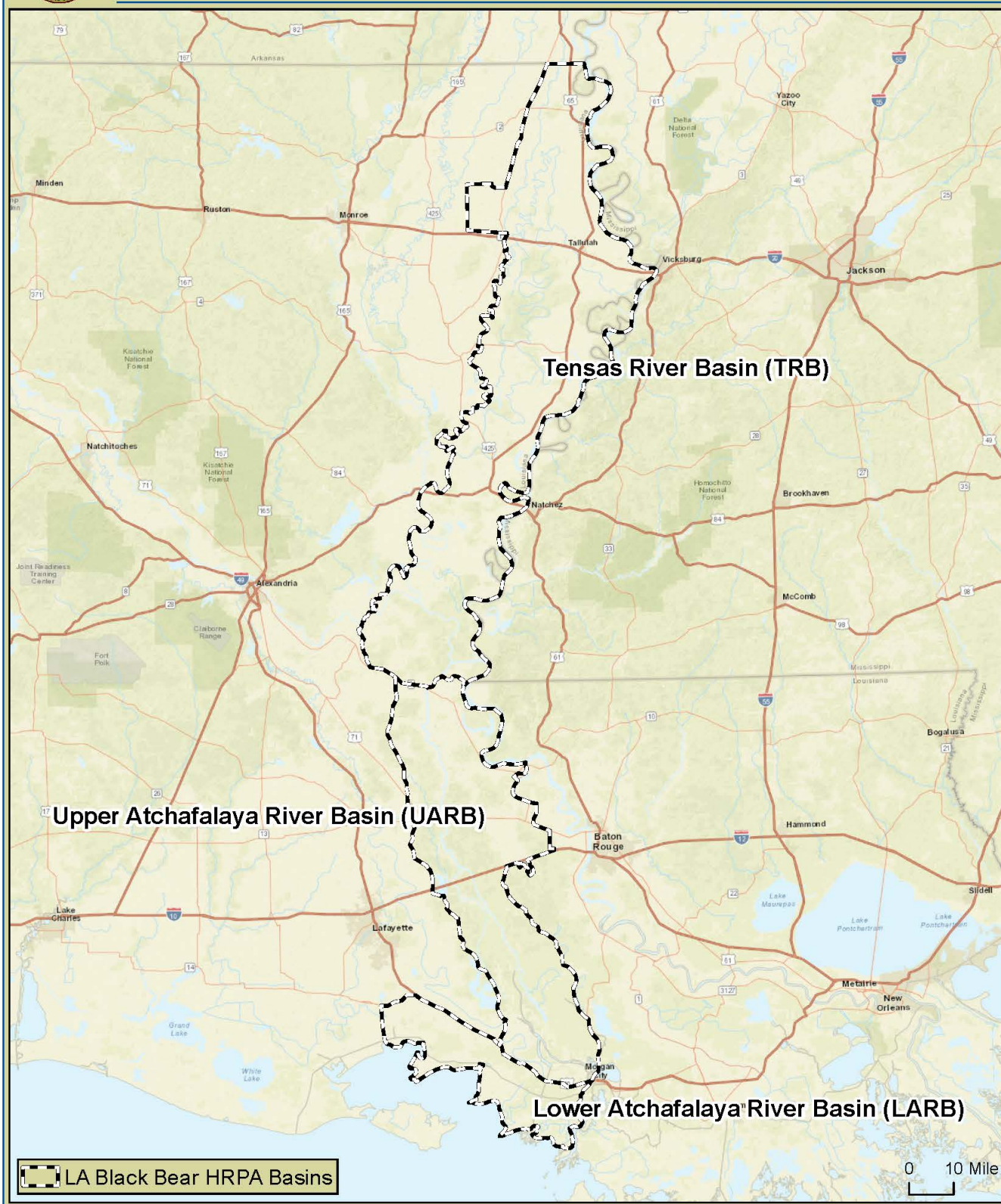
Insomuch as the primary purpose of the Service's habitat analysis is to track changes over time (not necessarily to report comprehensive habitat acreage totals throughout the HRP), we have not included Atchafalaya Basin Floodway Master Plan Easements and Acquisitions in our PDM habitat analysis to date. The acreage of those protected lands is reported in Table 5 of the Service's Louisiana black bear delisting rule (81FR13124), but has not changed over the course of our post-delisting monitoring (A. Hebert [*New Orleans District Corps of Engineers – Port Barre Office*], personal communication, February 13, 2019). Should changes to these lands occur in the future, they will be included in the Service's respective PDM report.



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La Black Bear Post Delisting Monitoring - HRPB Basins

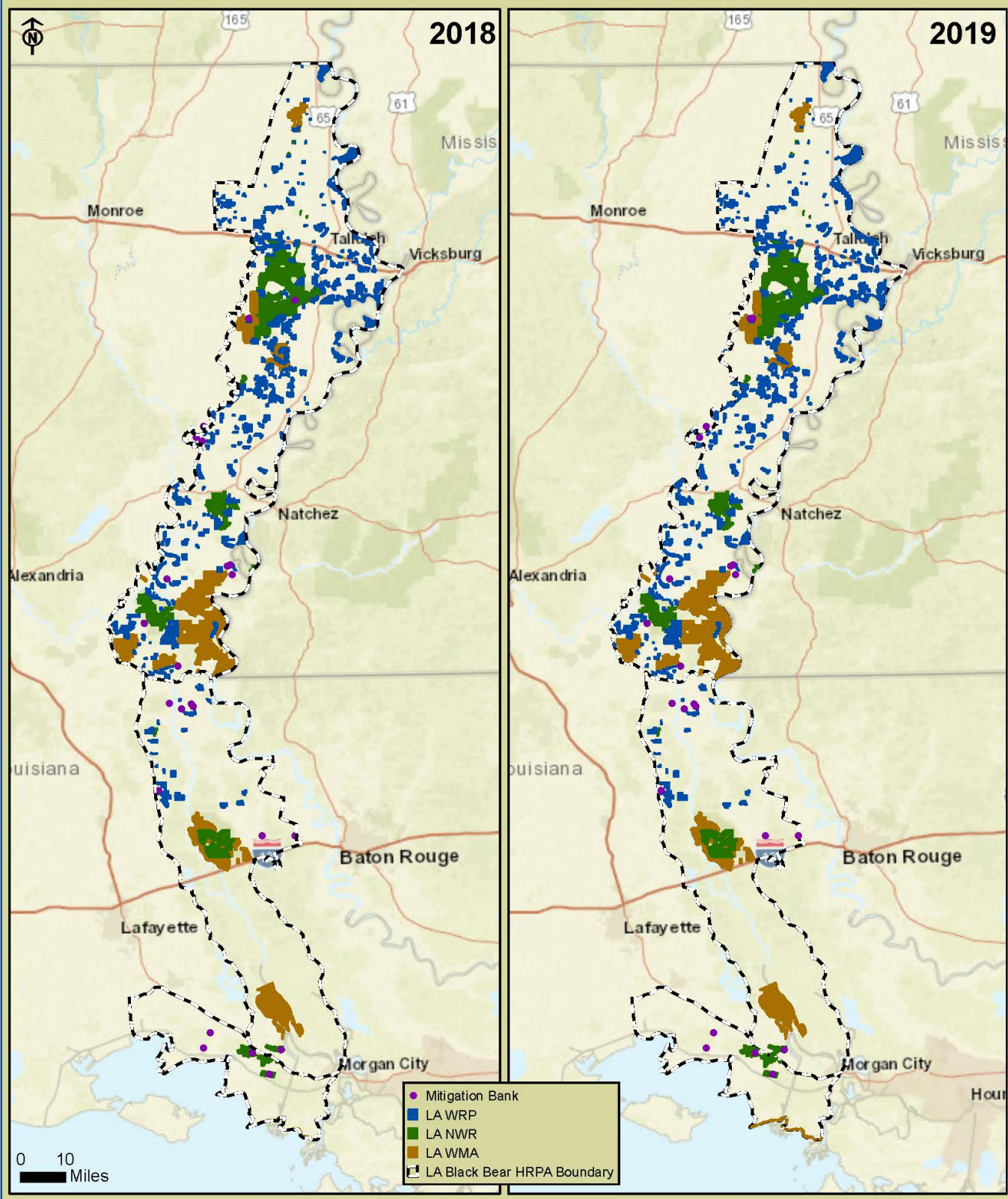




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LA Black Bear Post Delisting Monitoring - Conservation Lands Within the HRP



ENTIRE LOUISIANA BLACK BEAR HRPAs

Conservation Lands Within HRPAs	HRPA Acres Change 2018 to 2019	HRPA Acres Change 2014 to 2019
NWR / WMA / WRP / MB	-3,839.83	12,227.01

TENSAS RIVER BASIN

Tensas River Basin (TRB) of HRPAs

Conservation Lands Within HRPAs	TRB Acres (2017)	TRB Acres (2018)	TRB Acres (2019)
National Wildlife Refuge (NWR)	112,231.62	112,231.62	112,238.06
Wildlife Management Area (WMA)	143,558.18	143,558.18	143,558.18
Wetland Reserve Program (WRP)	147,355.95	153,406.80	149,120.63
Mitigation Banks (MB)	6,233.07	4,972.97	4,829.75
Totals:	409,378.83	414,169.57	409,746.63

Changes within Tensas River Basin (TRB) of HRPAs

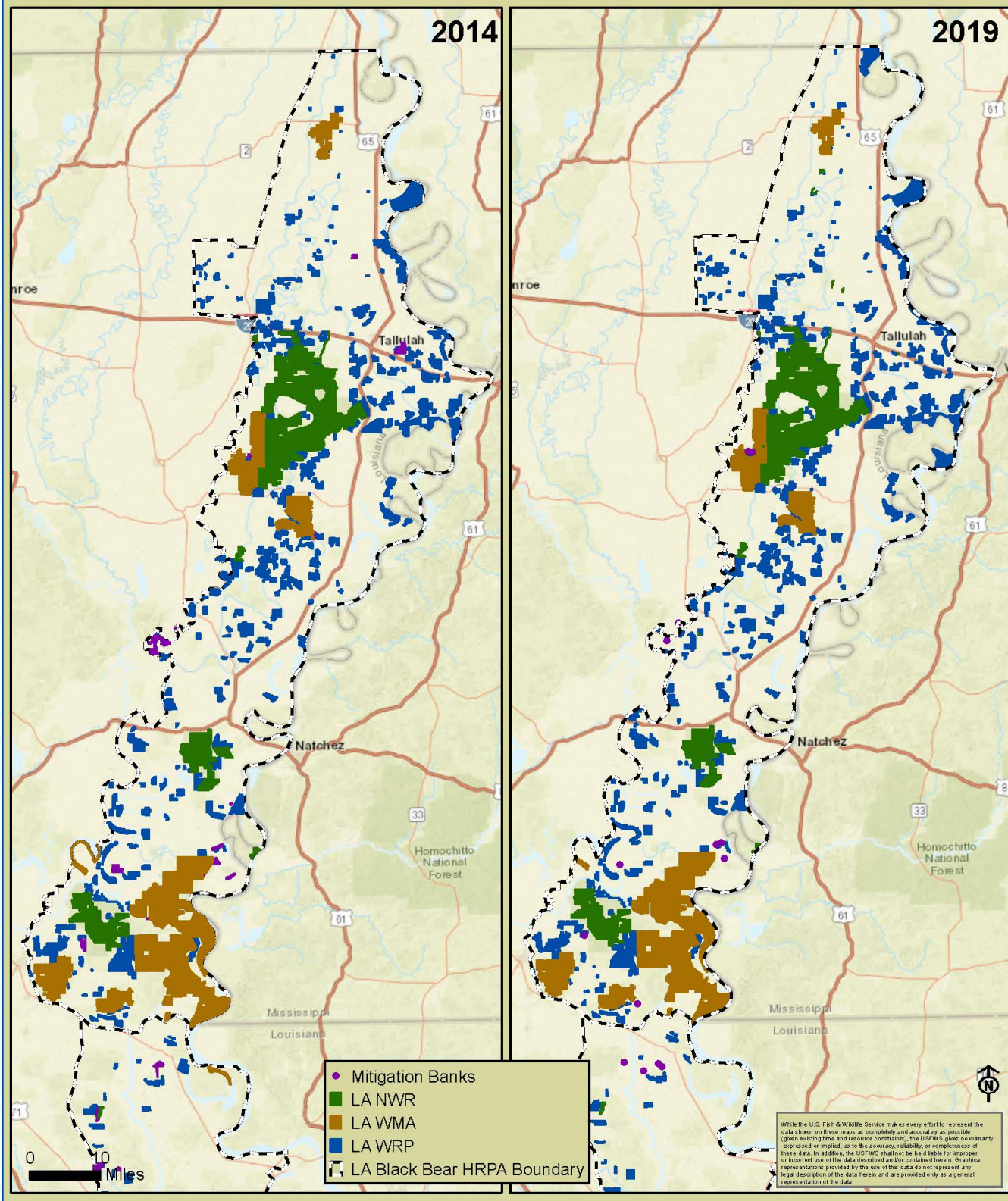
Conservation Lands Within HRPAs	TRB Acres Change (2018 to 2019)	TRB Acres Change (2014 to 2019)
National Wildlife Refuge (NWR)	6.44	272.50
Wildlife Management Area (WMA)	0.00	-375.26
Wetland Reserve Program (WRP)	-4,268.17	12,250.83
Mitigation Banks (MB)	-143.22	-1,100.19
Totals:	-4,422.94	11,047.88



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LA Black Bear Post Delisting Monitoring - Changes Within the HRPAs Tensas River Basin

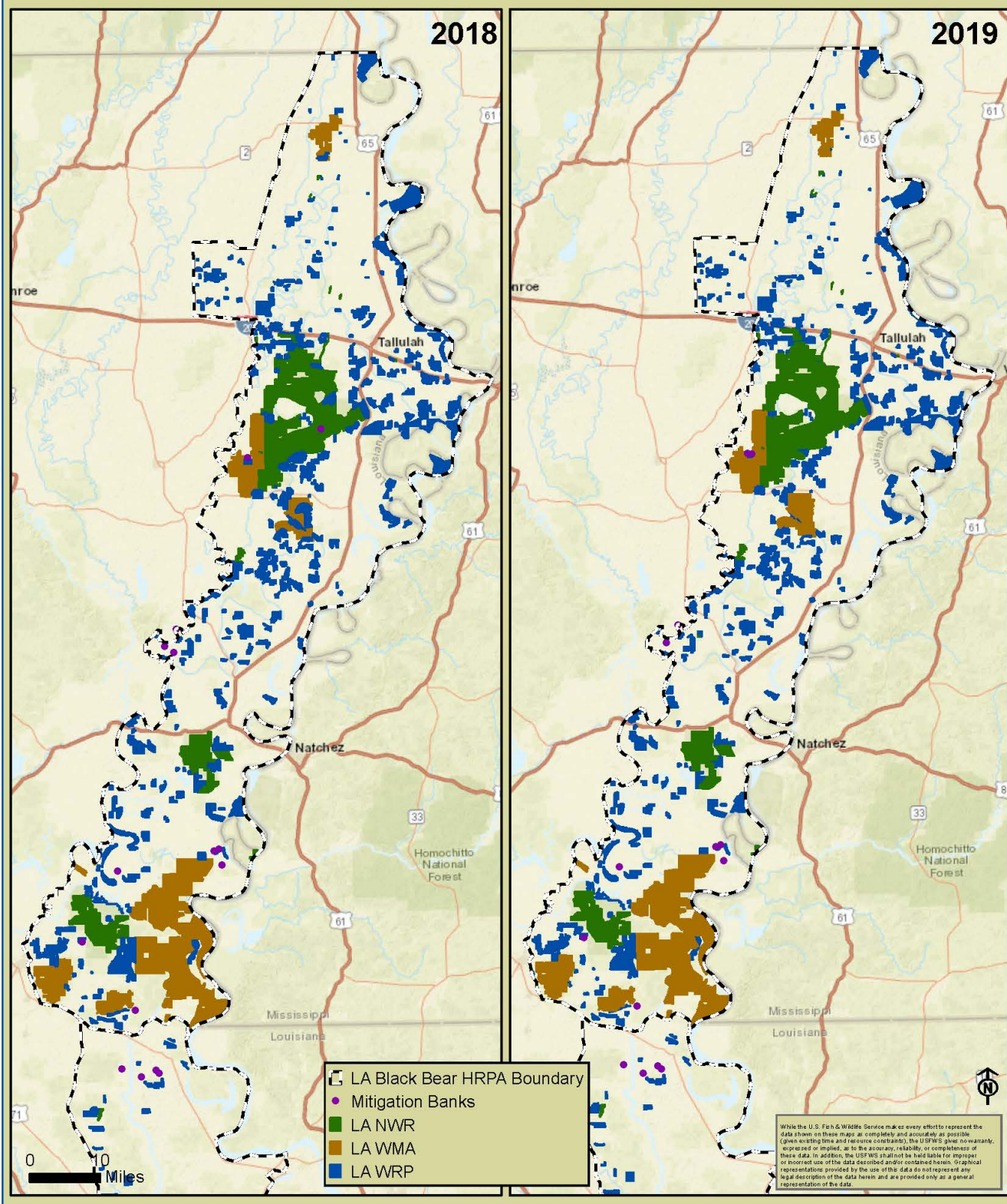




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LA Black Bear Post Delisting Monitoring - Changes Within the HRPAs Tensas River Basin



UPPER ATCHAFALAYA RIVER BASIN

Upper Atchafalaya River Basin (UARB) of HRP

Conservation Lands Within HRP	UARB Acres (2017)	UARB Acres (2018)	UARB Acres (2019)
National Wildlife Refuge (NWR)	17,611.82	17,611.82	17,947.75
Wildlife Management Area (WMA)	60,724.08	60,725.26	60,725.26
Wetland Reserve Program (WRP)	11,208.40	11,208.40	11,208.40
Mitigation Banks (MB)	3,571.00	2,882.60	2,912.40
Totals:	93,115.31	92,428.09	92,793.82

Changes within Upper Atchafalaya River Basin (UARB) of HRP

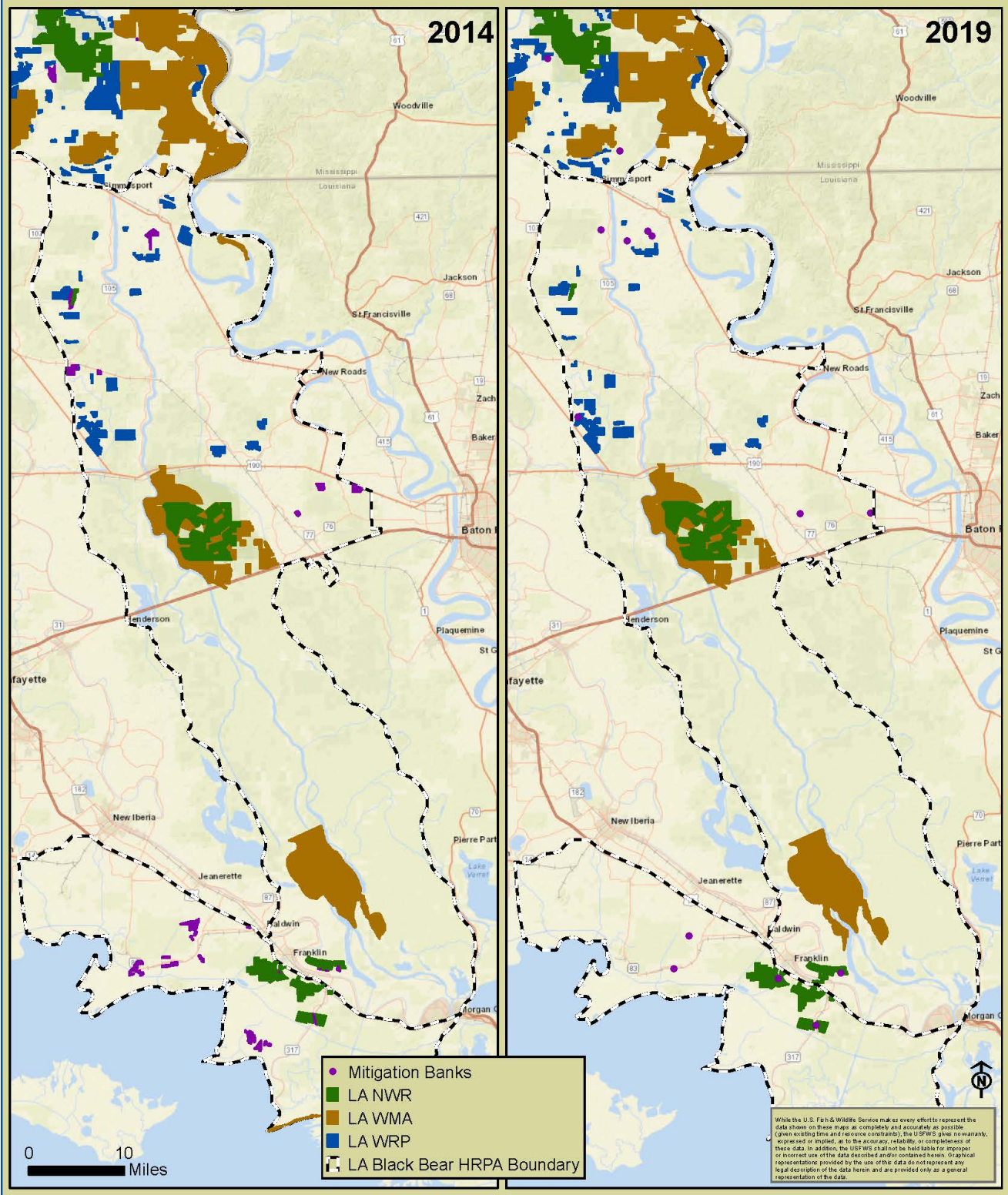
Conservation Lands Within HRP	UARB Acres Change (2018 to 2019)	UARB Acres Change (2014 to 2019)
National Wildlife Refuge (NWR)	335.93	333.56
Wildlife Management Area (WMA)	0.00	1,302.35
Wetland Reserve Program (WRP)	0.00	-321.83
Mitigation Banks (MB)	29.80	186.19
Totals:	365.73	1,500.26



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LA Black Bear Post Delisting Monitoring - Changes Within the HRP Upper Atchafalaya River Basin

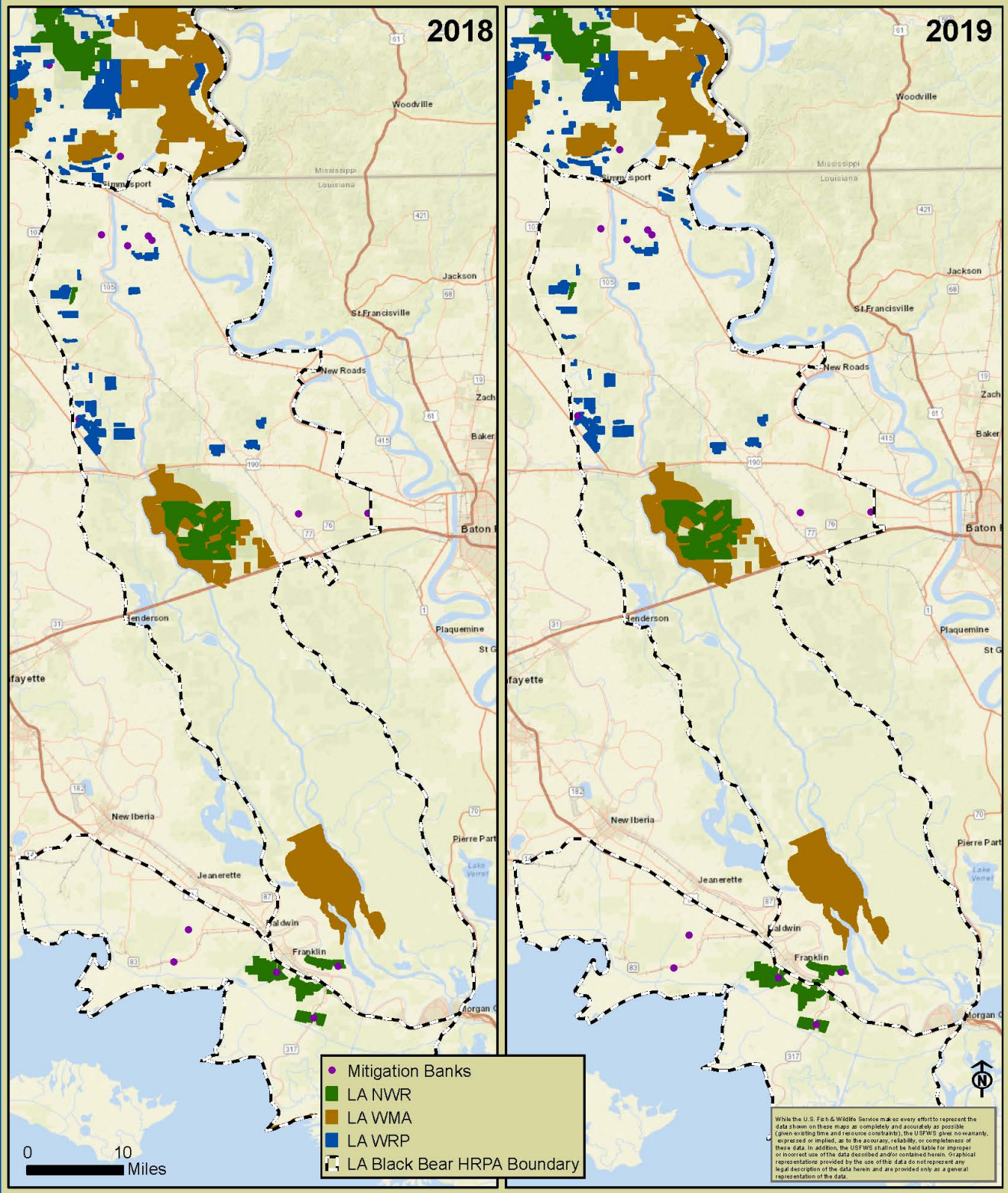




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LA Black Bear Post Delisting Monitoring - Changes Within the HRP Upper Atchafalaya River Basin



LOWER ATCHAFALAYA RIVER BASIN

Lower Atchafalaya River Basin (LARB) of HRP

Conservation Lands Within HRP	LARB Acres (2017)	LARB Acres (2018)	LARB Acres (2019)
National Wildlife Refuge (NWR)	7,379.68	7,379.68	7,597.07
Wildlife Management Area (WMA)	1,474.09	1,474.09	1,474.09
Wetland Reserve Program (WRP)	0.00	0.00	0.00
Mitigation Banks (MB)	2,672.41	2,180.40	2,180.40
Totals:	11,526.18	11,034.17	11,251.56

Changes within Lower Atchafalaya River Basin (LARB) of HRP

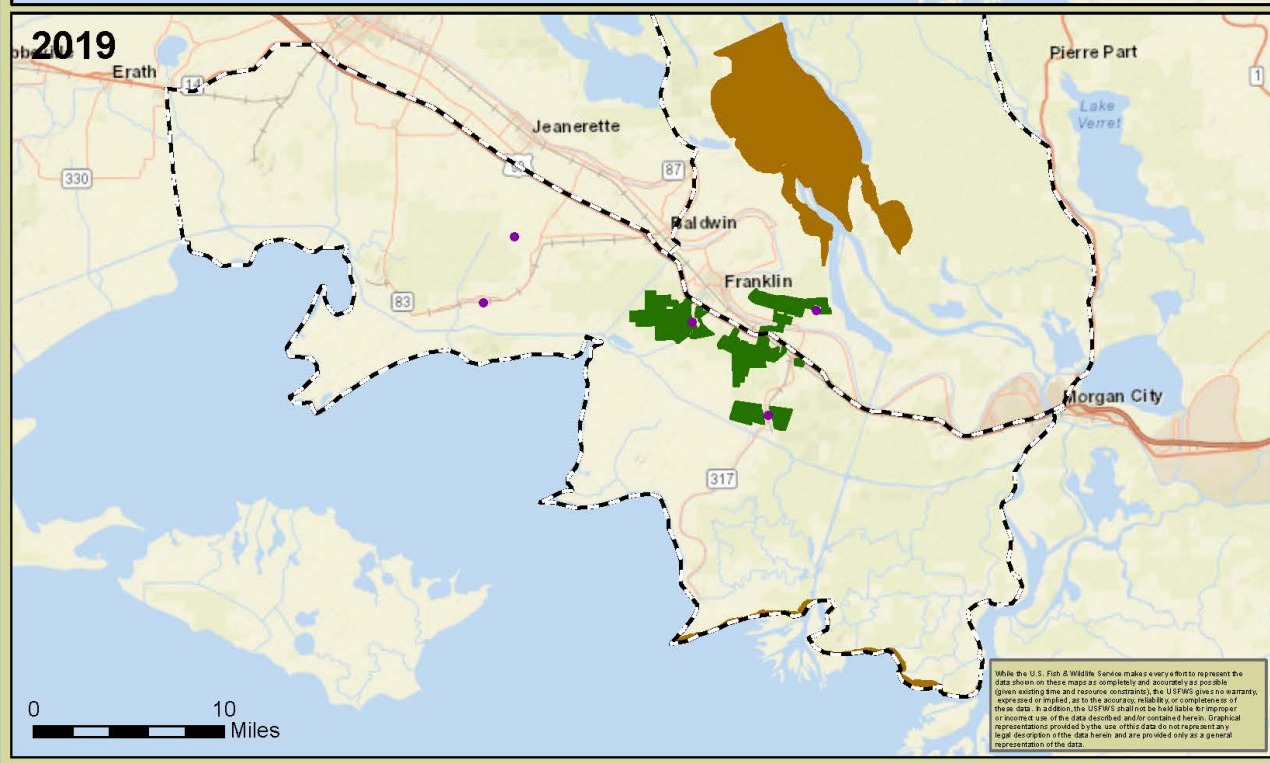
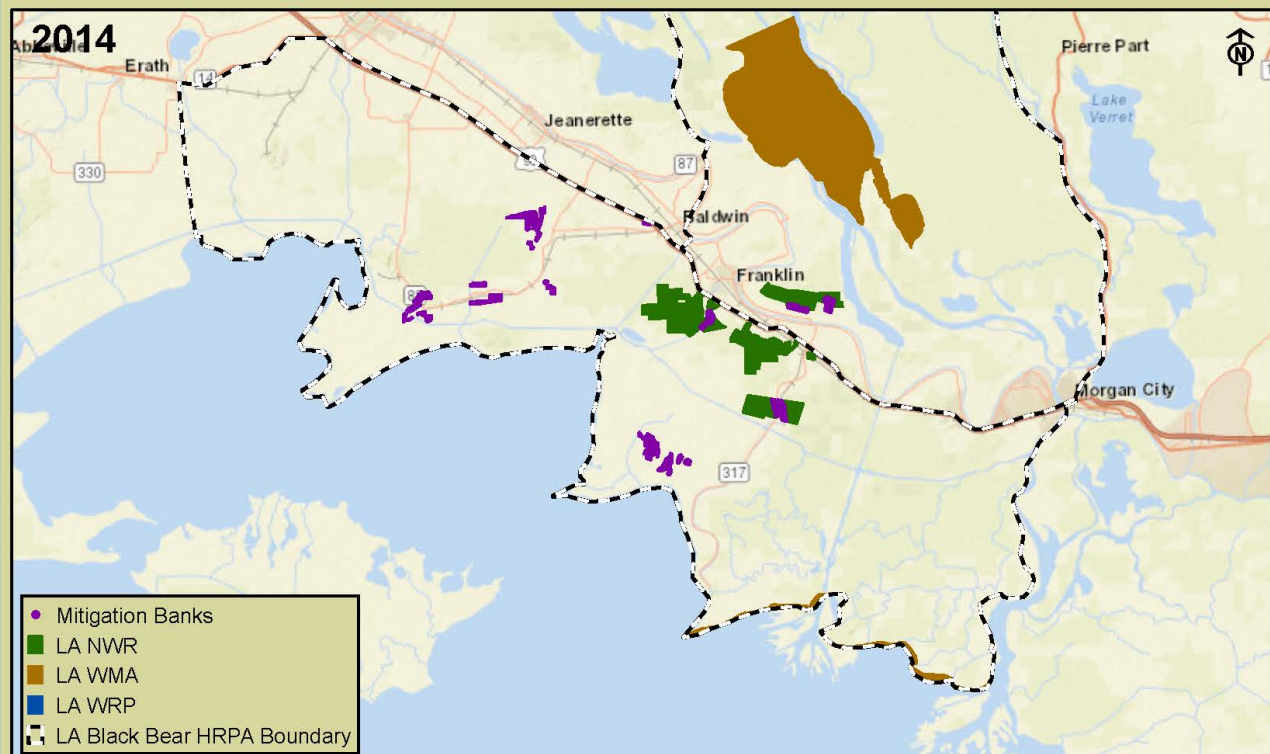
Conservation Lands Within HRP	LARB Acres Change (2018 to 2019)	LARB Acres Change (2014 to 2019)
National Wildlife Refuge (NWR)	217.39	170.88
Wildlife Management Area (WMA)	0.00	0.00
Wetland Reserve Program (WRP)	0.00	0.00
Mitigation Banks (MB)	0.00	-492.01
Totals:	217.39	-321.13



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LA Black Bear Post Delisting Monitoring - Changes Within the HRP Lower Atchafalaya River Basin

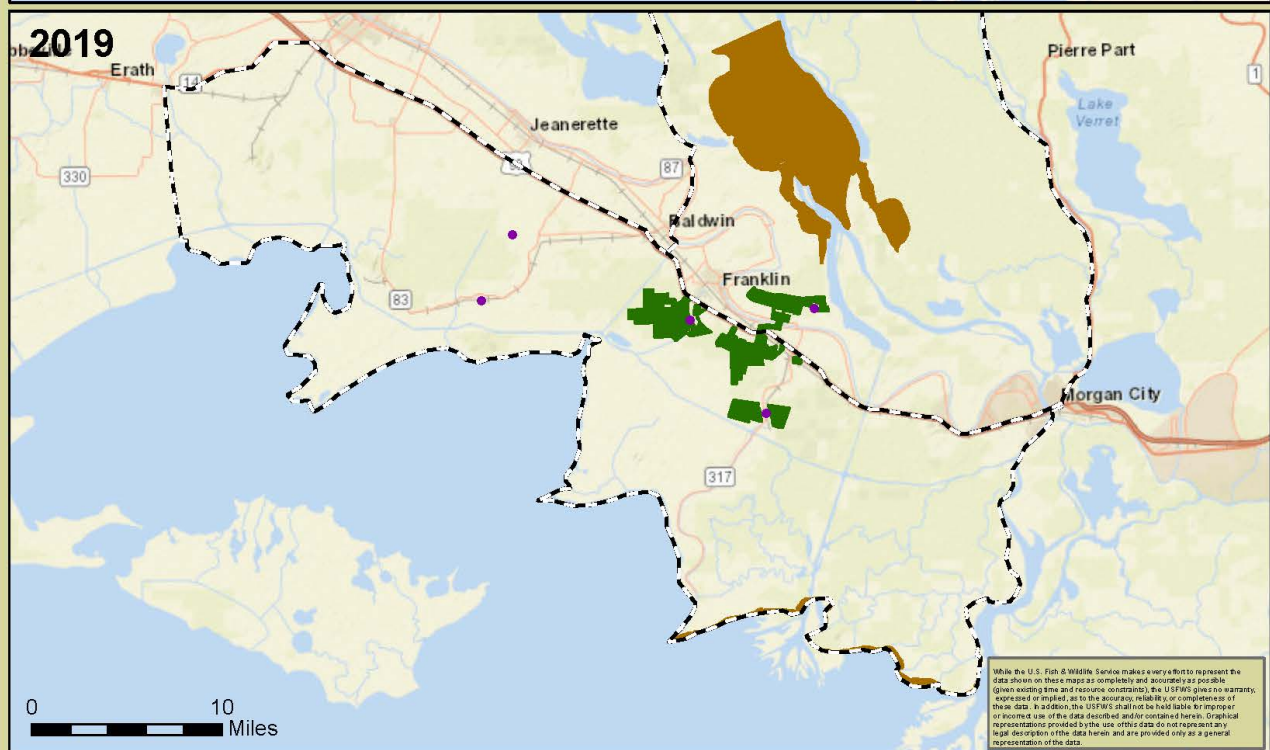
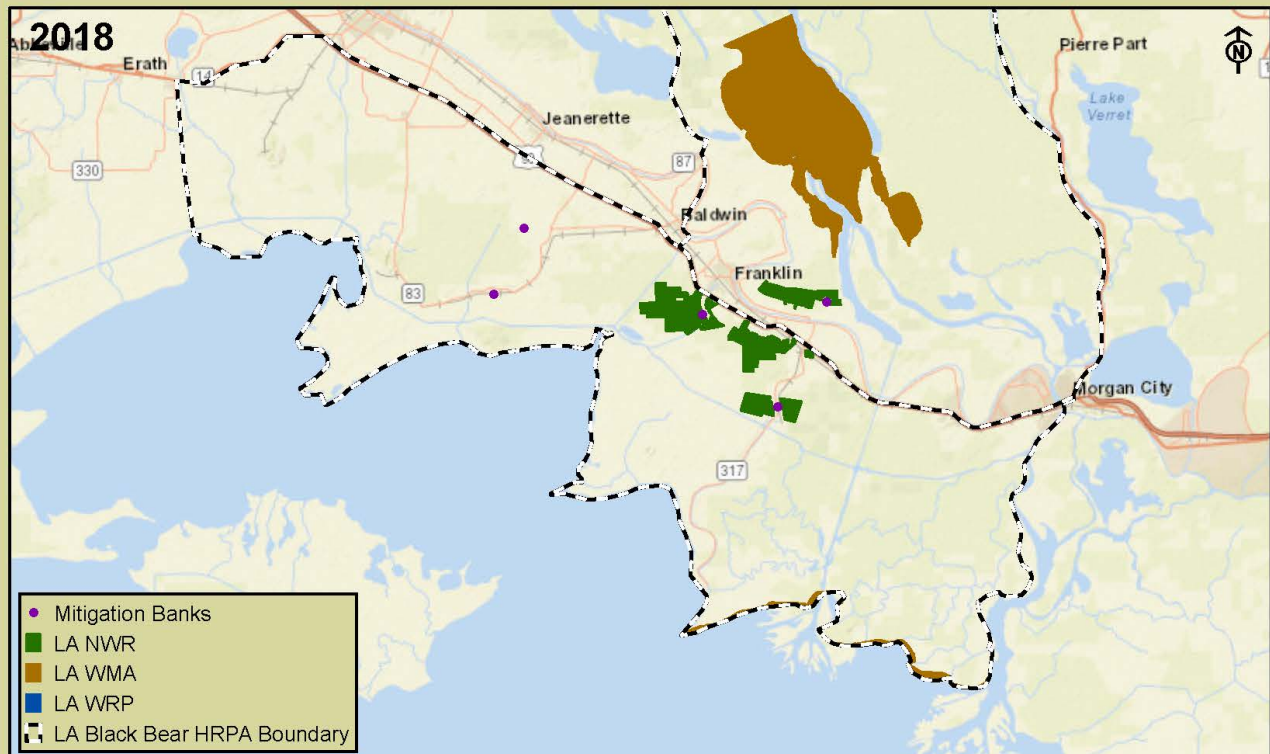




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LA Black Bear Post Delisting Monitoring - Changes Within the HRP Lower Atchafalaya River Basin



2017 Crop Scape Data

Crop	TRB 2017	UARB 2017	LARB 2017	Total Acres 2017	Percent
Alfalfa	124.06	0.00	0.00	124.06	0.00%
Aquaculture	437.68	3,480.10	996.31	4,914.08	0.14%
No Data	0.00	0.00	2,692.46	2,692.46	0.07%
Barren	1,400.29	479.73	838.12	2,718.14	0.08%
Clover/Wildflowers	1,444.54	0.67	1.11	1,446.32	0.04%
Corn	215,568.13	17,018.35	26.00	232,612.48	6.42%
Cotton	75,274.64	673.09	0.00	75,947.73	2.10%
Dbl Crop Corn/Soybeans	0.00	0.00	0.00	0.00	0.00%
Dbl Crop Soybeans/Cotton	0.00	0.00	0.00	0.00	0.00%
Dbl Crop Soybeans/Oats	0.00	94.05	0.00	94.05	0.00%
Dbl Crop WinWht/Corn	0.00	0.00	0.00	0.00	0.00%
Dbl Crop WinWht/Cotton	0.00	0.00	0.00	0.00	0.00%
Dbl Crop WinWht/Sorghum	0.00	0.00	0.00	0.00	0.00%
Dbl Crop WinWht/Soybeans	4,029.96	2,964.95	0.67	6,995.57	0.19%
Deciduous Forest	1,414.81	885.06	1,690.34	3,990.21	0.11%
Developed/High Intensity	547.16	627.01	778.85	1,953.01	0.05%
Developed/Low Intensity	10,105.32	19,158.29	6,686.86	35,950.47	0.99%
Developed/Med Intensity	3,595.87	1,305.11	941.06	5,842.04	0.16%
Developed/Open Space	51,838.59	18,549.90	3,337.23	73,725.73	2.04%
Evergreen Forest	1,061.05	30.24	32.91	1,124.19	0.03%
Fallow/Idle Cropland	31,311.19	13,930.53	9,644.37	54,886.09	1.52%
Grass/Pasture	16,536.76	41,358.84	6,061.15	63,956.75	1.77%
Herbaceous Wetlands	6,914.57	16,634.84	148,685.06	172,234.47	4.76%
Herbs	0.00	0.00	0.00	0.00	0.00%
Millet	151.39	0.00	0.00	151.39	0.00%
Misc Veggies & Fruits	0.00	0.00	0.00	0.00	0.00%
Mixed Forest	7,697.92	96.10	49.57	7,843.59	0.22%
Oats	1,355.81	0.00	0.00	1,355.81	0.04%
Open Water	78,872.81	80,937.13	22,649.62	182,459.55	5.04%
Other Crops	0.00	0.00	0.00	0.00	0.00%
Other Hay/Non Alfalfa	32,254.80	1,155.50	8.00	33,418.30	0.92%
Peaches	0.89	0.00	0.00	0.89	0.00%
Peanuts	22.45	0.00	0.00	22.45	0.00%
Peas	0.00	0.00	0.00	0.00	0.00%
Pecans	35,463.72	9.56	0.00	35,473.28	0.98%
Pop or Orn Corn	0.00	0.00	0.00	0.00	0.00%
Rice	23,710.39	9,212.88	245.79	33,169.06	0.92%
Rye	0.56	0.22	0.00	0.79	0.00%
Shrubland	3,627.74	5,895.16	345.24	9,868.13	0.27%
Sod/Grass Seed	100.84	0.00	0.00	100.84	0.00%
Sorghum	3,163.96	584.92	0.00	3,748.88	0.10%
Soybeans	711,786.99	116,615.84	3,553.00	831,955.83	22.97%
Spring Wheat	0.00	0.00	0.00	0.00	0.00%
Sugarcane	1,286.84	74,601.74	35,499.27	111,387.85	3.08%
Sunflower	51.58	0.00	0.00	51.58	0.00%
Sweet Corn	0.00	0.00	0.00	0.00	0.00%

Sweet Potatoes	2,374.15	119.81	0.00	2,493.96	0.07%
Winter Wheat	1,779.18	183.38	0.00	1,962.56	0.05%
Woody Wetlands	729,504.33	774,240.81	121,238.40	1,624,983.54	44.87%
Total	2,054,810.94	1,200,843.78	366,001.38	3,621,656.11	100.00%

2019 Crop Scape Data

Crop	TRB 2019	UARB 2019	LARB 2019	Total Acres 2019	Percent
Alfalfa	252.35	0.00	0.00	252.35	0.01%
Aquaculture	577.83	3,660.55	922.19	5,160.57	0.14%
No Data/Background	18,184.09	0.00	2,692.46	20,876.56	0.58%
Barren	539.42	42.29	13.78	595.49	0.02%
Clover/Wildflowers	154.54	0.22	0.00	154.76	0.00%
Corn	240,958.21	13,353.52	8.45	254,320.19	7.02%
Cotton	129,134.04	2,133.80	2.67	131,270.50	3.62%
Dbl Crop Corn/Soybeans	8.01	0.00	0.00	8.01	0.00%
Dbl Crop Soybeans/Cotton	0.00	0.00	0.00	0.00	0.00%
Dbl Crop Soybeans/Oats	0.22	0.00	0.00	0.22	0.00%
Dbl Crop WinWht/Corn	0.00	0.00	0.00	0.00	0.00%
Dbl Crop WinWht/Cotton	20.68	0.00	0.00	20.68	0.00%
Dbl Crop WinWht/Sorghum	0.00	0.00	0.00	0.00	0.00%
Dbl Crop WinWht/Soybeans	3,140.09	2,189.24	0.89	5,330.22	0.15%
Deciduous Forest	508.02	763.04	180.51	1,451.57	0.04%
Developed/High Intensity	604.72	637.64	855.68	2,098.05	0.06%
Developed/Low Intensity	12,447.02	18,103.81	6,442.72	36,993.55	1.02%
Developed/Med Intensity	2,651.60	1,496.80	1,084.29	5,232.69	0.14%
Developed/Open Space	44,560.94	14,784.29	3,520.23	62,865.46	1.74%
Evergreen Forest	1,469.97	172.41	48.24	1,690.61	0.05%
Fallow/Idle Cropland	114,381.92	23,479.27	11,804.11	149,665.29	4.13%
Grass/Pasture	16,758.05	42,825.94	6,081.68	65,665.68	1.81%
Herbaceous Wetlands	89,741.43	32,971.47	154,544.48	277,257.38	7.66%
Herbs	0.00	0.00	0.00	0.00	0.00%
Millet	250.32	2.45	0.22	252.98	0.01%
Misc Veggies & Fruits	0.00	0.00	0.00	0.00	0.00%
Mixed Forest	555.33	1,700.49	2,765.77	5,021.59	0.14%
Oats	219.52	1.11	0.00	220.64	0.01%
Open Water	95,835.31	82,813.23	24,631.46	203,280.00	5.61%
Other Crops	0.00	0.00	0.00	0.00	0.00%
Other Hay/Non Alfalfa	21,979.81	1,651.25	27.85	23,658.91	0.65%
Peaches	0.44	0.00	0.22	0.67	0.00%
Peanuts	157.24	0.00	0.00	157.24	0.00%
Peas	0.00	0.00	0.00	0.00	0.00%
Pecans	4,689.05	76.89	0.44	4,766.39	0.13%
Pop or Orn Corn	0.00	0.00	0.00	0.00	0.00%
Rice	25,518.06	10,187.27	171.86	35,877.19	0.99%

Rye	0.00	0.00	0.00	0.00	0.00%
Shrubland	1,056.34	991.91	56.46	2,104.71	0.06%
Sod/Grass Seed	106.08	1.78	1.11	108.97	0.00%
Sorghum	1,669.64	204.31	0.00	1,873.95	0.05%
Soybeans	438,946.55	85,395.21	689.72	525,031.49	14.50%
Spring Wheat	0.00	0.00	0.00	0.00	0.00%
Sugarcane	1,175.81	99,261.56	36,463.30	136,900.66	3.78%
Sunflower	10.67	0.00	0.00	10.67	0.00%
Sweet Corn	0.00	0.00	0.00	0.00	0.00%
Sweet Potatoes	1,093.40	108.70	0.00	1,202.10	0.03%
Winter Wheat	2,215.36	1,096.67	0.44	3,312.47	0.09%
Woody Wetlands	783,239.02	760,736.78	112,989.87	1,656,965.66	45.75%
Total	2,054,811.10	1,200,843.89	366,001.12	3,621,656.10	100.00%

2017-2019 Crop Scape Data

Crop	TRB 2017 to 2019	UARB 2017 to 2019	LARB 2017 to 2019	HRPA 2017 to 2019	HRPA 2017 to 2019 Change
Alfalfa	128.29	0.00	0.00	128.29	0.00%
Aquaculture	140.16	180.45	-74.12	246.49	0.01%
No Data	18,184.09	0.00	0.01	18,184.10	0.50%
Barren	-860.88	-437.44	-824.33	-2,122.65	-0.06%
Clover/Wildflowers	-1,290.00	-0.44	-1.11	-1,291.56	-0.04%
Corn	25,390.09	-3,664.83	-17.55	21,707.71	0.60%
Cotton	53,859.40	1,460.71	2.67	55,322.77	1.53%
Dbl Crop Corn/Soybeans	8.01	0.00	0.00	8.01	0.00%
Dbl Crop Soybeans/Cotton	0.00	0.00	0.00	0.00	0.00%
Dbl Crop Soybeans/Oats	0.22	-94.05	0.00	-93.82	0.00%
Dbl Crop WinWht/Corn	0.00	0.00	0.00	0.00	0.00%
Dbl Crop WinWht/Cotton	20.68	0.00	0.00	20.68	0.00%
Dbl Crop WinWht/Sorghum	0.00	0.00	0.00	0.00	0.00%
Dbl Crop WinWht/Soybeans	-889.87	-775.71	0.22	-1,665.35	-0.05%
Deciduous Forest	-906.79	-122.02	-1,509.83	-2,538.64	-0.07%
Developed/High Intensity	57.57	10.64	76.83	145.04	0.00%
Developed/Low Intensity	2,341.70	-1,054.47	-244.15	1,043.08	0.03%
Developed/Med Intensity	-944.26	191.68	143.24	-609.34	-0.02%
Developed/Open Space	-7,277.66	-3,765.61	183.00	-10,860.27	-0.30%
Evergreen Forest	408.92	142.17	15.33	566.42	0.02%
Fallow/Idle Cropland	83,070.73	9,548.74	2,159.74	94,779.21	2.62%
Grass/Pasture	221.30	1,467.10	20.53	1,708.93	0.05%
Herbaceous Wetlands	82,826.86	16,336.63	5,859.42	105,022.91	2.90%
Herbs	0.00	0.00	0.00	0.00	0.00%
Millet	98.93	2.45	0.22	101.59	0.00%
Misc Veggies & Fruits	0.00	0.00	0.00	0.00	0.00%
Mixed Forest	-7,142.60	1,604.40	2,716.20	-2,822.00	-0.08%
Oats	-1,136.29	1.11	0.00	-1,135.17	-0.03%

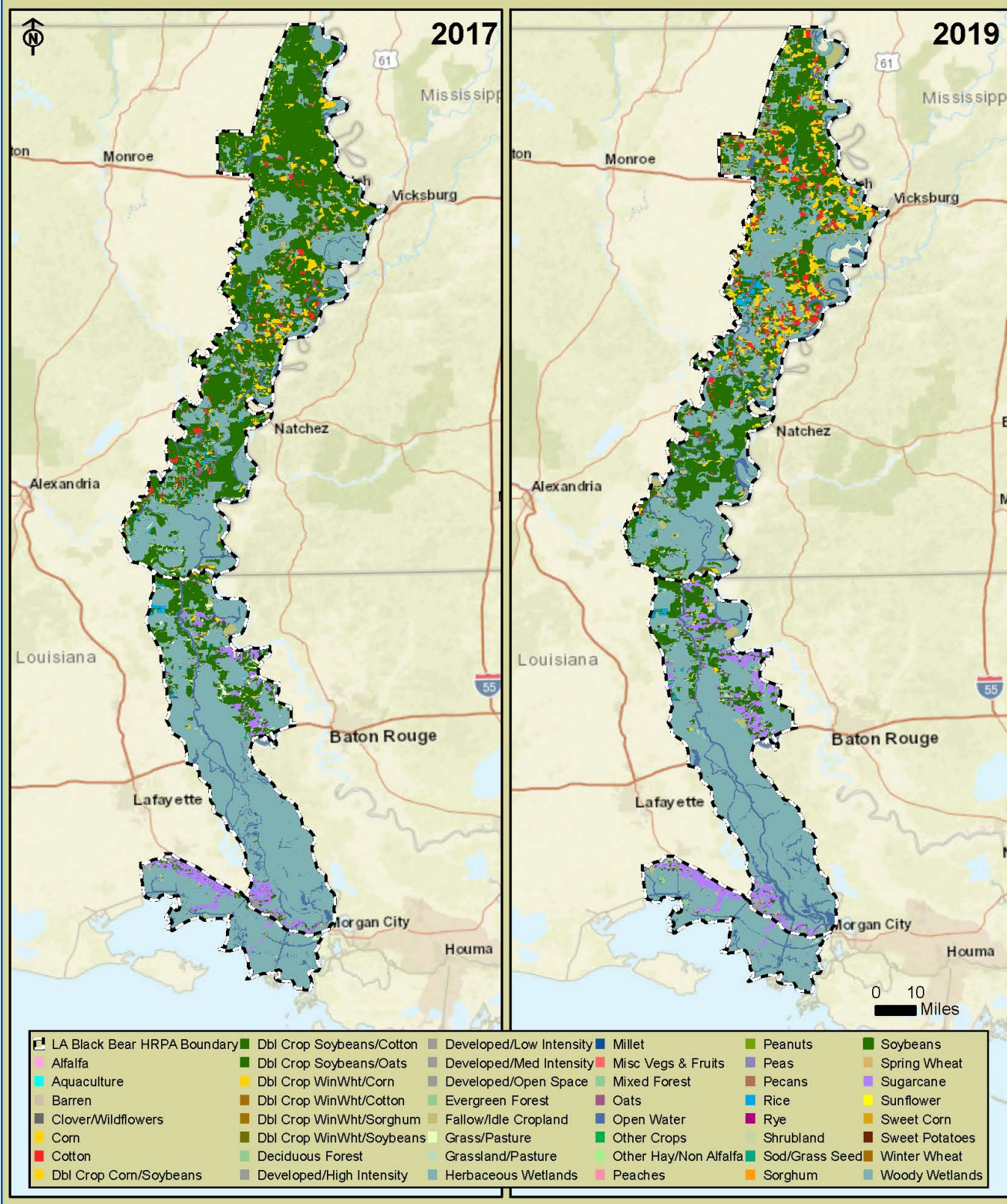
Open Water	16,962.50	1,876.10	1,981.84	20,820.44	0.57%
Other Crops	0.00	0.00	0.00	0.00	0.00%
Other Hay/Non Alfalfa	-10,274.99	495.75	19.85	-9,759.39	-0.27%
Peaches	-0.44	0.00	0.22	-0.22	0.00%
Peanuts	134.78	0.00	0.00	134.78	0.00%
Peas	0.00	0.00	0.00	0.00	0.00%
Pecans	-30,774.67	67.33	0.44	-30,706.89	-0.85%
Pop or Orn Corn	0.00	0.00	0.00	0.00	0.00%
Rice	1,807.67	974.39	-73.93	2,708.13	0.07%
Rye	-0.56	-0.22	0.00	-0.79	0.00%
Shrubland	-2,571.39	-4,903.25	-288.77	-7,763.42	-0.21%
Sod/Grass Seed	5.24	1.78	1.11	8.13	0.00%
Sorghum	-1,494.32	-380.61	0.00	-1,874.93	-0.05%
Soybeans	-272,840.44	-31,220.63	-2,863.28	-306,924.34	-8.47%
Spring Wheat	0.00	0.00	0.00	0.00	0.00%
Sugarcane	-111.04	24,659.82	964.03	25,512.81	0.70%
Sunflower	-40.91	0.00	0.00	-40.91	0.00%
Sweet Corn	0.00	0.00	0.00	0.00	0.00%
Sweet Potatoes	-1,280.75	-11.11	0.00	-1,291.87	-0.04%
Winter Wheat	436.18	913.28	0.44	1,349.91	0.04%
Woody Wetlands	53,734.69	-13,504.03	-8,248.54	31,982.12	0.88%
Total	0.00	0.00	0.00	0.00	



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LA Black Bear Post Delisting Monitoring - USDA Crop Changes Within the HRP

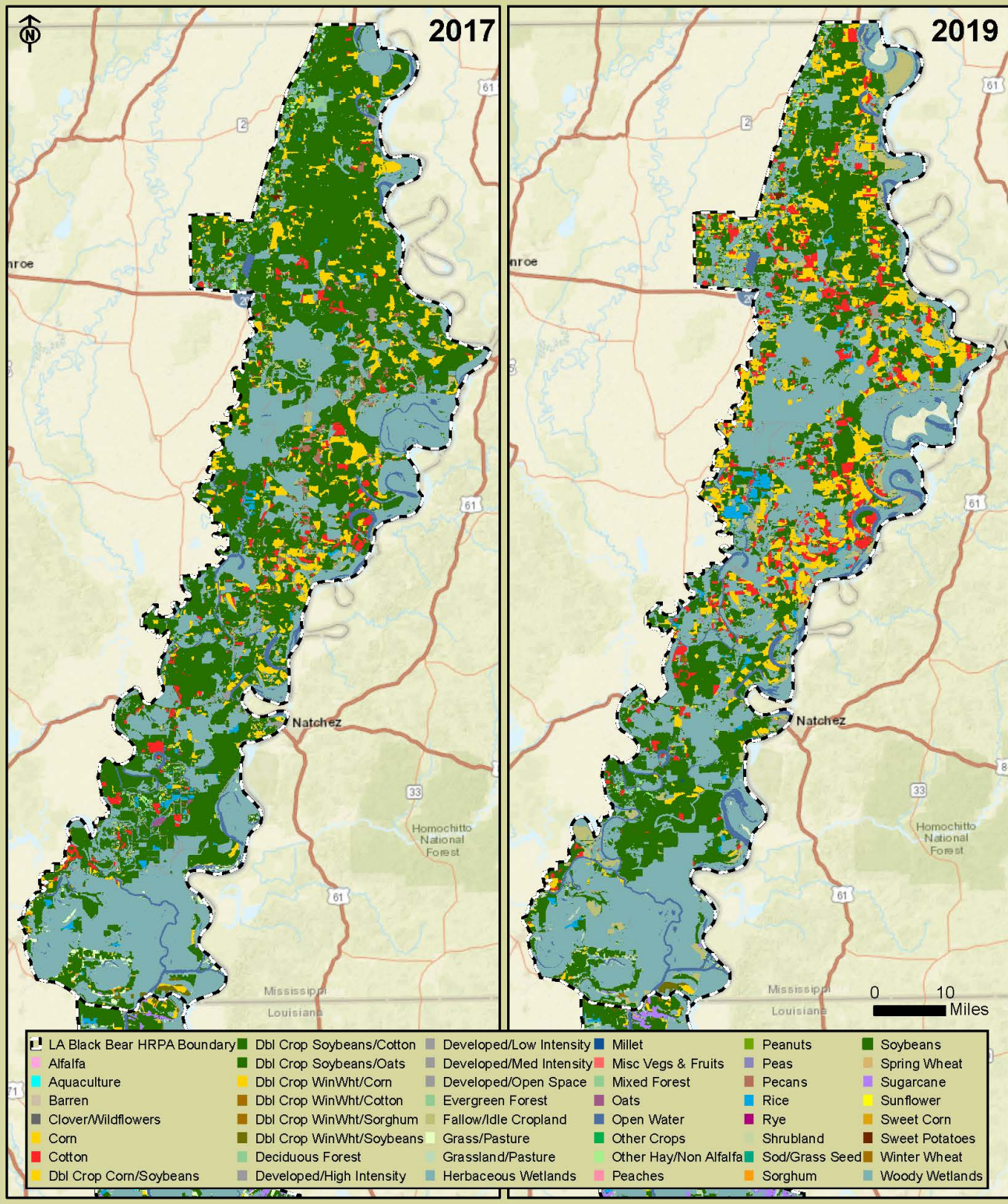




U.S. Fish & Wildlife Service

Louisiana Ecological Services

LA Black Bear Post Delisting Monitoring - USDA Crop Changes Within the HRPAs - Tensas River Basin

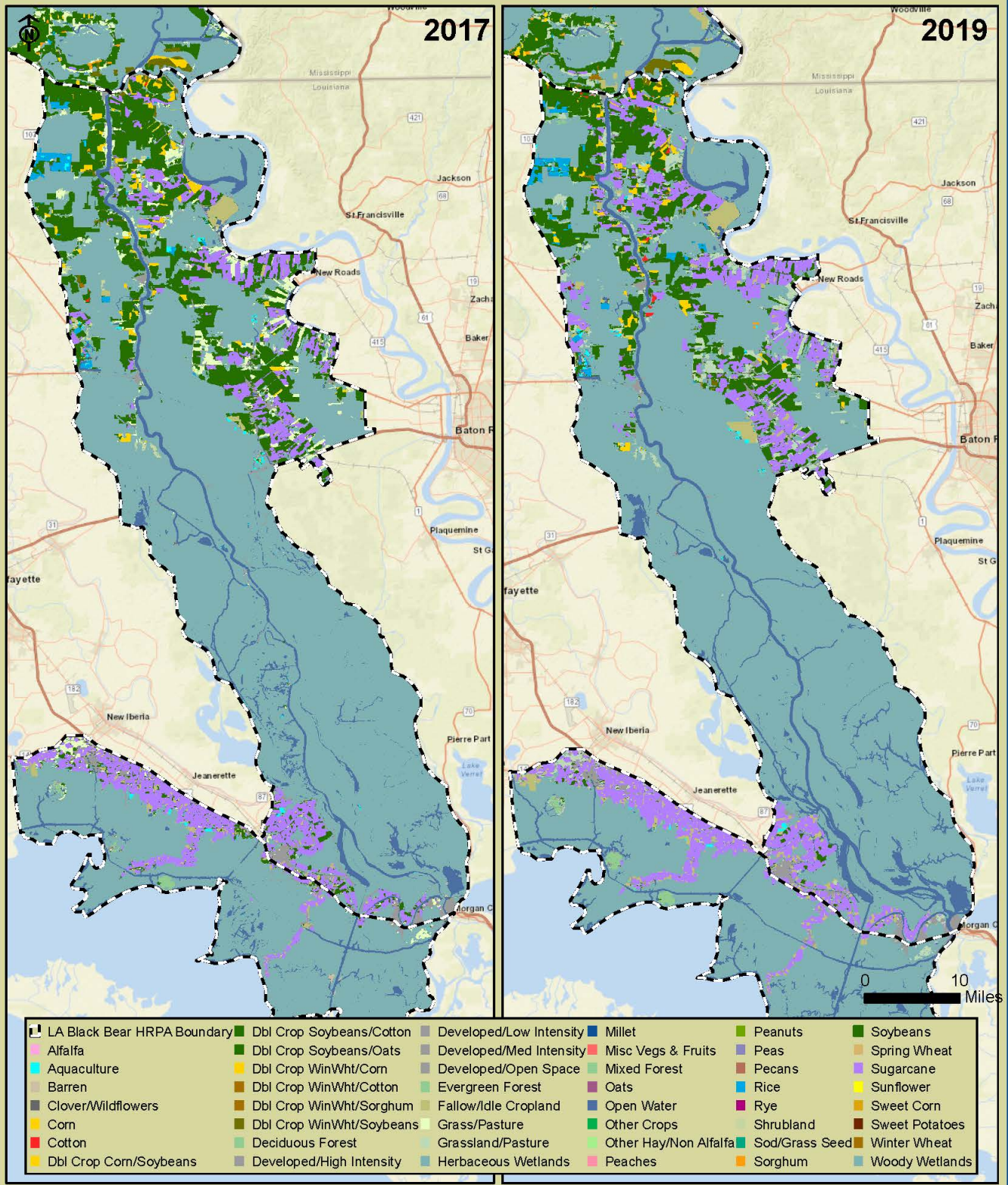




U.S. Fish & Wildlife Service

Louisiana Ecological Services

LA Black Bear Post Delisting Monitoring - USDA Crop Changes Within the HRP - Upper Atchafalaya River Basin

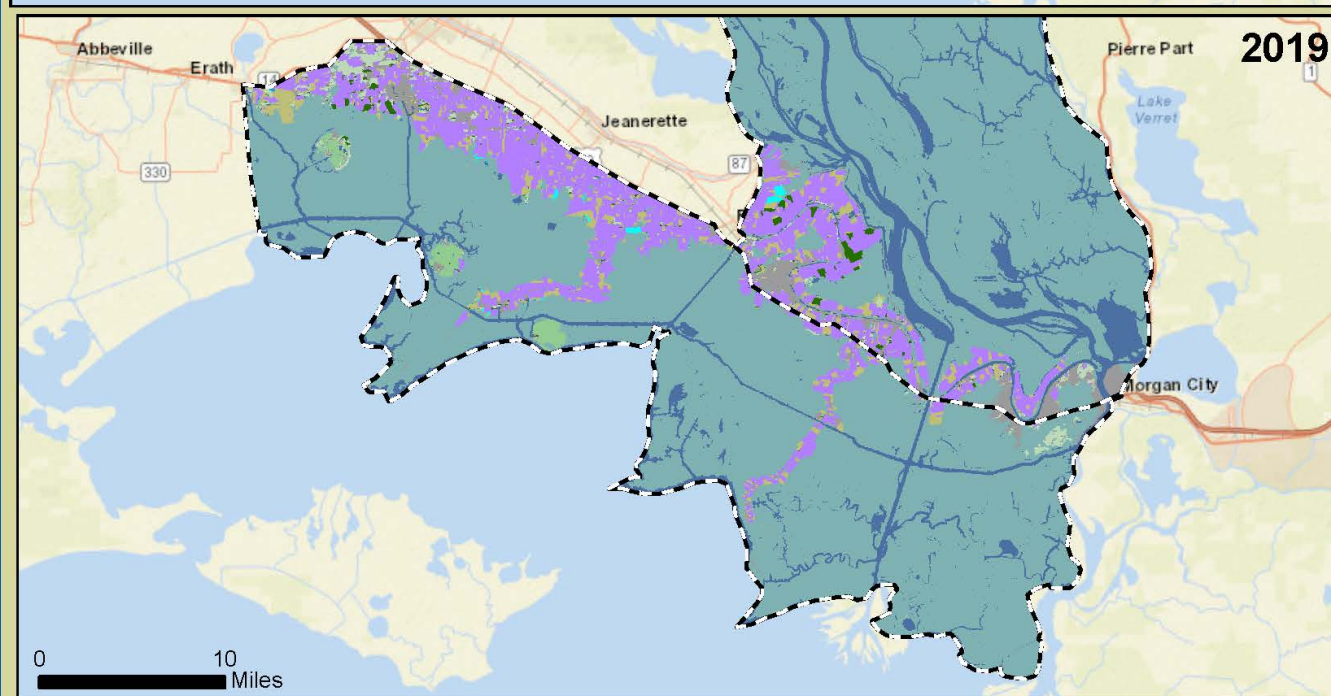
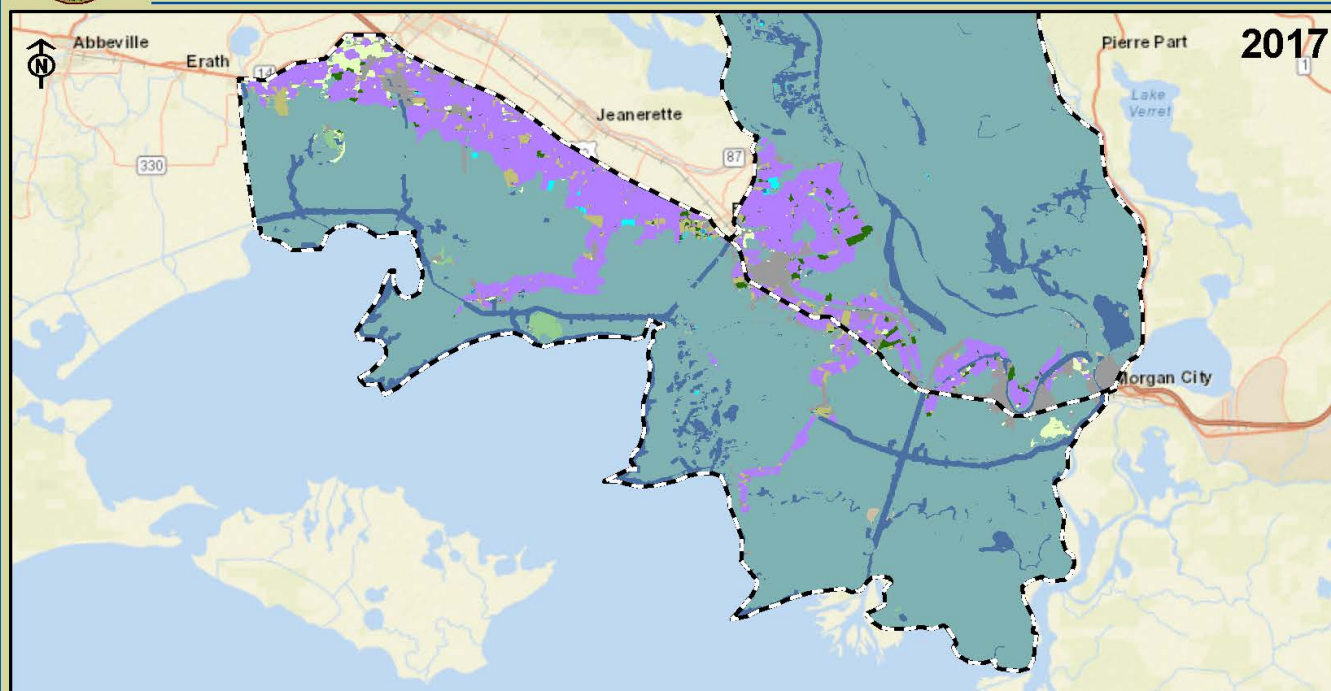




U.S. Fish & Wildlife Service

Louisiana Ecological Services

LA Black Bear Post Delisting Monitoring - USDA Crop Changes Within the HRP - Lower Atchafalaya River Basin



LA Black Bear HRP Boundary	Dbl Crop Soybeans/Cotton	Developed/Low Intensity	Millet	Peanuts	Soybeans
Alfalfa	Dbl Crop Soybeans/Oats	Developed/Med Intensity	Misc Veggies & Fruits	Peas	Spring Wheat
Aquaculture	Dbl Crop WinWht/Com	Developed/Open Space	Mixed Forest	Pecans	Sugarcane
Barren	Dbl Crop WinWht/Cotton	Evergreen Forest	Oats	Rice	Sunflower
Clover/Wildflowers	Dbl Crop WinWht/Sorghum	Fallow/Idle Cropland	Open Water	Rye	Sweet Corn
Corn	Dbl Crop WinWht/Soybeans	Grass/Pasture	Other Crops	Shrubland	Sweet Potatoes
Cotton	Deciduous Forest	Grassland/Pasture	Other Hay/Non Alfalfa	Sod/Grass Seed	Winter Wheat
Dbl Crop Corn/Soybeans	Developed/High Intensity	Herbaceous Wetlands	Peaches	Sorghum	Woody Wetlands