

5.6 WILDLIFE RESOURCES

Diverse species of wildlife depend on the Missouri River floodplain habitats. The endangered interior least tern and threatened piping plover nest on exposed sandbars and are consequently directly affected by river flows. Periodic high flows are required to remove encroaching vegetation. However, during and following the nesting season, stable or declining flows are needed to avoid nest flooding and stranding immature birds on the lower parts of sandbars and islands. These birds also nest on bare sand exposed when the lakes drop during droughts; however, this analysis does not include that habitat.

Effects on other wildlife species were not individually modeled. However, changes in the wetland and riparian habitat values provide some insight into the effects of a change from the CWCP to one of the other alternatives. The tern and plover model simulates the vegetation encroachment and removal process as river flows and associated stages rise and fall in four river reaches. These reaches are downstream from Fort Peck, Garrison, Fort Randall, and Gavins Point Dams. The baseline habitat acreage was that acreage existing in the early 1990s in these four reaches. Unfortunately, the model does not simulate the geomorphic process of island and sandbar building that takes place at very high flows with a relatively long duration, such as occurred in 1997. Not enough is currently known about this geomorphic process to incorporate it into the model at this time. A more comprehensive discussion of least tern and piping plover populations and habitat along the Missouri River is contained in Environmental Studies—Least Tern and Piping Plover (Corps, 1994q). Uncertainties associated with the tern and plover model are discussed in Section 6.5.6.

An analysis of the number of acres of relatively clear island and sandbar habitat was conducted for each alternative as part of the modeling effort to determine potential impacts to the terns and plovers. Based on this analysis, the average annual available habitat for terns and plovers for all submitted alternatives is presented in Table 5.6-1 and shown in Figure 5.6-1. The table also provides data on the individual reaches for the full period of analysis. Two factors need to be considered as the data are reviewed. First, the reach downstream from Garrison Dam has almost half of the total habitat, even though there are four reaches with the habitat. Second, the reach downstream from Gavins Point Dam has provided the greatest number of fledged birds in recent years, even though it has approximately 60 percent less habitat than the reach downstream from Garrison Dam.

The CWCP provides 220.5 acres of tern and plover habitat on an average annual basis. This total acreage along the four downstream reaches analyzed is distributed among the Fort Peck reach (22.8 percent), Garrison reach (44.4 percent), Fort Randall reach (14.8 percent), and Gavins Point reach (18.0 percent).

Figure 5.6-1 graphically shows that three of the alternatives are grouped between 300.1 acres and 302.2 acres, a difference of only 2.1 acres. Two of the other alternatives are grouped, ranging between 374.3 and 382.8 acres (a difference of 8.5 acres), while the remaining two alternatives are between 220.5 and 231.7 acres (an 11.2-acre difference). The CWCP provides the lowest total amount of average annual tern and plover habitat of the submitted alternatives. Generally, the total average annual number of acres of tern and plover habitat increases as the existing balanced system of

Table 5.6-1. Average annual tern and plover habitat downstream of mainstem dams (acres).

Alternative	1898 to 1997				
	Total	Fort Peck	Garrison	Fort Randall	Gavins Point
CWCP	220.5	50.3	97.9	32.7	39.5
MLDDA	231.7	56.3	90.0	38.2	47.3
ARNRC	302.2	22.3	136.4	74.3	69.3
MRBA	300.6	69.6	147.8	38.8	44.4
MODC	300.1	47.6	177.9	33.8	40.8
BIOP	382.8	27.5	212.4	65.0	77.9
FWS30	374.3	23.3	210.1	68.9	72.0

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intrasystem regulation is modified. Adding the increase in spring releases and the decrease in summer releases from Gavins Point Dam provides additional habitat. One of the alternatives with this change, the BIOP alternative, provides the greatest total increase (162.3 acres, or 73.6 percent) in the amount of relatively clear island and sandbar habitat compared to the CWCP. This is primarily due to the increased amount of tern and plover habitat downstream of Garrison, Fort Randall, and Gavins Point Dams. An additional alternative is included in Figure 5.6-1. This alternative, called the run-of-river alternative (ROR alternative) in the figure, simulates what would happen should flows enter and move through the system uncontrolled. Compared to the CWCP and the remaining alternatives in Figure 5.6-1, the ROR alternative creates the greatest amount of total clear island and sandbar habitat downstream of the four dams at 584.7 acres. This is a dramatic increase over the amount of habitat available under the submitted alternatives. It represents an increase of 265 percent over the amount of habitat under the CWCP and a 153 percent increase over the amount of habitat under the BIOP alternative.

The CWCP and the MLDDA alternative both have a balanced intrasystem regulation and do not have an additional spring and summer release, but the MLDDA alternative decreases the base of flood control storage by 2 MAF. A reduction in the system's base of flood control storage generally increases the amount of tern and plover habitat in three of the downstream reaches: Fort Peck (11.9 percent), Fort Randall (16.8 percent), and Gavins Point (20.2 percent). It reduces this habitat by 8.1 percent downstream of Garrison Dam.

The ARNRC alternative has an unbalanced intrasystem regulation and a split navigation season that mimics the natural flow of the Missouri River. It is apparent that the combination of an additional spring and a lower summer release from Gavins Point Dam that mimics the natural flow of the Lower River creates an increase in habitat downstream of all dams except Fort Peck, where there is a 55.7 percent decrease in habitat. Under the ARNRC alternative, the greatest increase in habitat occurs downstream of Fort Randall Dam, where 127.2 percent more tern and plover habitat is created over that of the CWCP.

The MRBA alternative maintains a flat release from Gavins Point Dam during the summer; however,

intrasystem regulation is unbalanced and drought conservation in the upper three lakes is increased. These changes result in an overall increase in tern and plover habitat in all four downstream locations compared to the CWCP. Under the MRBA alternative, the greatest increase in habitat occurs downstream of Garrison Dam, where an additional 49.9 acres (or 50.9 percent) of clear island and sandbar habitat is created. Downstream of Fort Peck and Fort Randall Dams, there is a 38.3 and 18.6 percent increase in habitat, respectively. The reach below Gavins Point Dam, an area that has fledged the greatest numbers of birds in recent years, would yield an additional 4.9 acres (12.4 percent) of relatively clear island and sand bar habitat for terns and plovers. This alternative and the ARNRC alternative have similar levels of conservation of water in the lakes during droughts, and the major differences between the two alternatives is the higher spring releases and lower summer releases from Gavins Point Dam and the higher spring releases from Fort Peck Dam. With these two changes, the increase in habitat for the ARNRC alternative is only 1.6 acres, an increase of 0.5 percent over the total amount of habitat provided by the MRBA alternative. There is a difference, however, in the distribution of this habitat, as noted above.

When compared to the CWCP, the MODC alternative results in greater tern and plover habitat in three of the four downstream locations; however, there is a 5.4 percent reduction in habitat downstream of Fort Peck Dam. This reduction is likely due to the increased releases in July at Fort Peck Dam that occur under the simulation of this alternative. This changed flow pattern likely results from the extra water that is held in the lakes in many years because of the delayed evacuation in the late August and early September timeframe of many years. The greatest increase in habitat occurs downstream of Garrison Dam where the MODC alternative would create an additional 80.0 acres (81.7 percent) of relatively clear island and sandbar habitat. Compared to the CWCP, the MODC alternative creates an additional 3.4 percent of habitat downstream of Fort Randall Dam and 3.3 percent more habitat downstream of Gavins Point Dam.

An additional spring release, as with the BIOP and FWS30 alternatives, generally increases the amount of tern and plover habitat in all downstream reaches except downstream from Fort Peck Dam. Here, the BIOP alternative would decrease tern and plover habitat by 54.7 percent and the FWS30 alternative

would decrease habitat by 53.6 percent. This reduction is likely due to the forced spring rise from Fort Peck Dam that is incorporated as a component in these alternatives. The greatest increase in tern and plover habitat occurs downstream of Garrison Dam, where there is a 116.9 percent increase in habitat under the BIOP alternative and a 114.6 percent increase under the FWS30 alternative. Downstream of Fort Randall Dam, the FWS30 alternative would create the greatest amount of habitat (110.7 percent more than the CWCP) of the submitted alternatives, and the BIOP alternative would create the most habitat downstream of Gavins Point Dam (97.2 percent more than the CWCP).

The annual values of total tern and plover habitat for the submitted alternatives are shown on Figures 5.6-2 thorough 5.6-3. Tern and plover habitat is highly variable during the entire period of analysis, and it is not possible to identify a specific pattern for any of the alternatives. The years with the greatest increase in habitat are 1936, 1975, and 1984 with the MLDDA alternative, 1984 with the BIOP alternative, and 1920 for the FWS30 alternative. The CWCP, MRBA, and MODC alternatives all reach habitat acreages between 1,400 and 1,700 acres during the mid to late 1980s. After this period, tern and plover habitat declines significantly to less than 400 acres with all alternatives.

5.6.1 Tern and Plover Habitat for Four Tribal Reservations

Table 5.6-2 presents the average annual tern and plover habitat under the submitted alternatives for four Tribal Reservations along two river reaches included in the analysis during the full period, 1898 to 1997. The Reservations analyzed are Fort Peck

Reservation, located downstream of Fort Peck Dam, and Yankton Reservation, Ponca Tribal Lands, and Santee Reservation, all located downstream of Fort Randall Dam. The latter two Reservations are located adjacent to Lewis and Clark Lake; however, they are included as benefiting from increased habitat in the nearby upstream river reach.

Total tern and plover habitat associated with these Reservations is 83.05 acres under the CWCP. Five of the six other alternatives increase total tern and plover habitat over the CWCP: MLDDA by 13.8 percent, ARNRC by 16.2 percent, MRBA by 30.5 percent, BIOP by 11.4 percent, and FWS30 by 11.0 percent. The remaining alternative, MODC, reduces habitat by 2.0 percent.

The CWCP provides 50.4 acres of tern and plover habitat within the Fort Peck Reservation. Of the six submitted alternatives, the only habitat increases within this Reservation occur under the MRBA alternative (38.2 percent) and MLDDA alternative (11.9 percent). The MODC alternative reduces tern and plover habitat by 5.4 percent. The BIOP, FWS30, and ARNRC alternatives all result in larger decreases in tern and plover habitat within this Reservation, 45.4, 53.8, and 55.8 percent, respectively.

The Yankton Reservation, Ponca Tribal Lands, and Santee Reservation yield 32.7 acres of tern and plover habitat under the CWCP. All the other alternatives increase tern and plover habitat compared to the CWCP. The largest percentage increase over the CWCP occurs under the ARNRC, FWS30, and BIOP alternatives, with which tern and plover habitat increase by 127.1, 110.7, and 98.7 percent, respectively. Lesser increases, 18.7, 16.7, and 3.3 percent, occur under the MRBA, MLDDA, and MODC alternatives, respectively.

Table 5.6-2. Average annual tern and plover habitat (acres) for four Tribal Reservations.

Reservation	1898 to 1997						
	CWCP	MLDDA	ARNRC	MRBA	MODC	BIOP	FWS30
Fort Peck	50.4	56.3	22.3	69.6	47.6	27.5	23.3
Yankton, Ponca Tribal Lands, and Santee	32.7	38.2	74.3	38.8	33.8	65.0	68.9
Total	83.1	94.5	96.5	108.4	81.4	92.5	92.2

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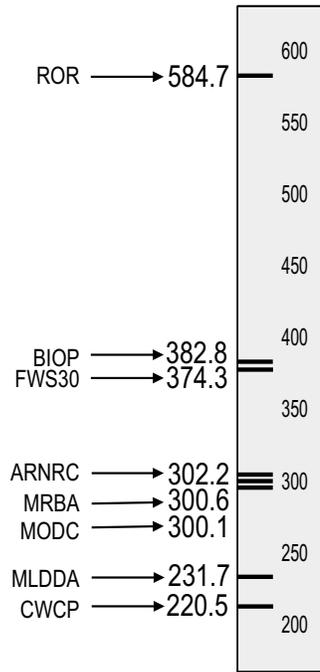


Figure 5.6-1. Average annual tern and plover habitat for submitted alternatives (acres).

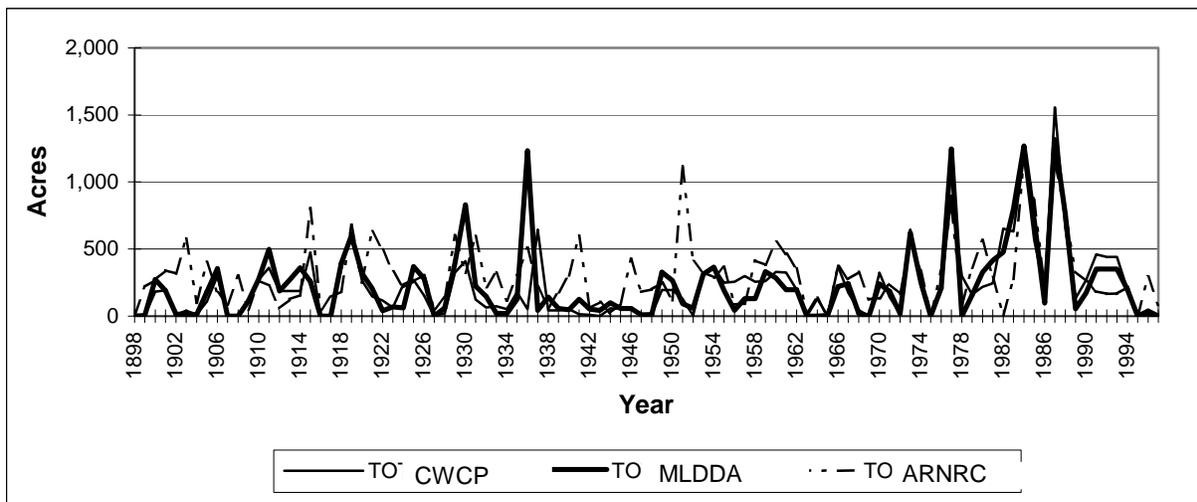


Figure 5.6-2. Average annual tern and plover habitat for alternatives CWCP, MLDDA, and ARNRC.

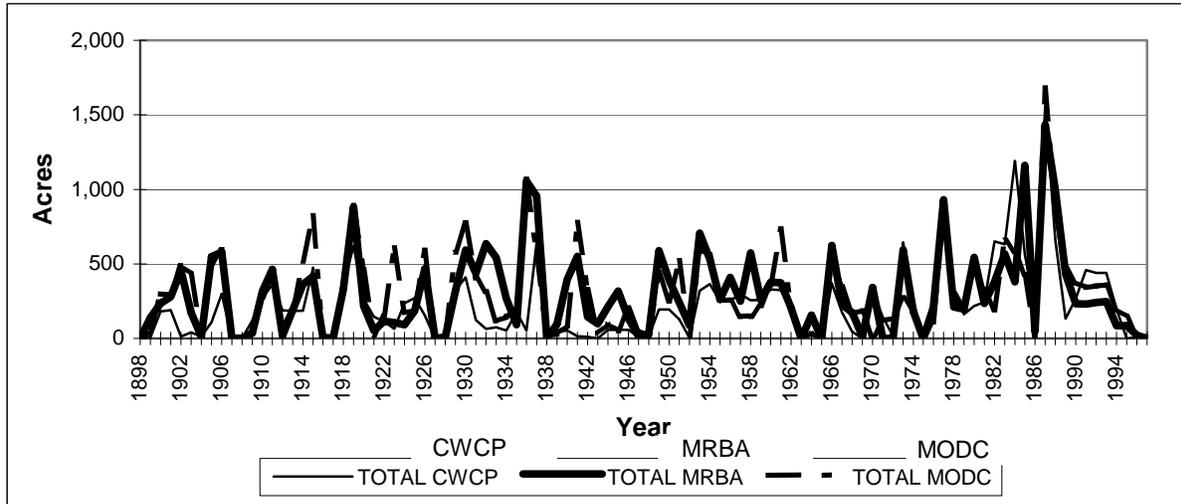


Figure 5.6-3. Average annual and plover habitat for alternatives CWCP, MRBA, and MODC.

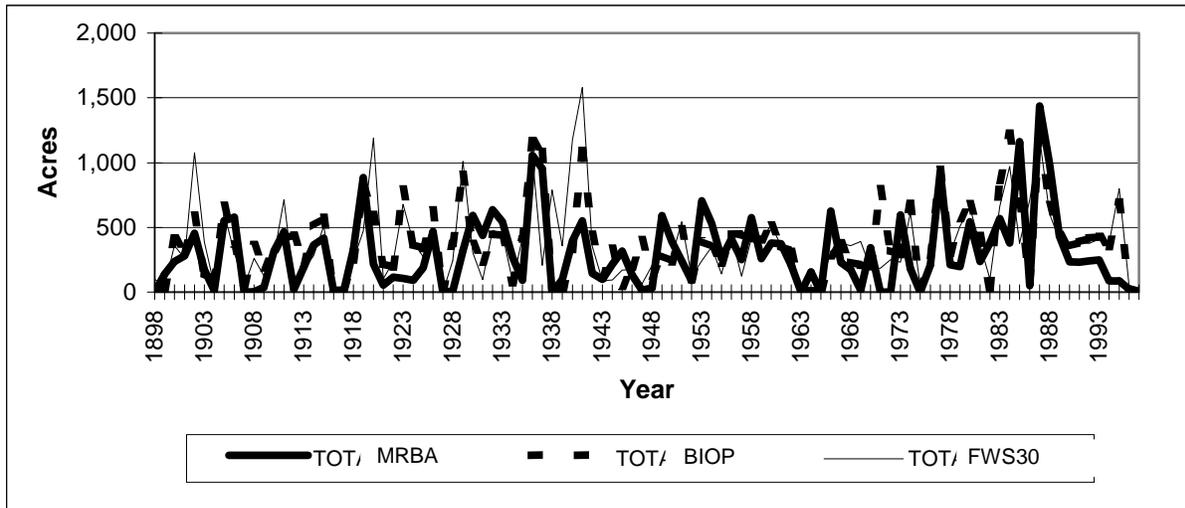


Figure 5.6-4. Average annual tern and plover habitat for alternatives MRBA, BIOP, and FWS30.

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