

7.6 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 the stranding of 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 this 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 habitat model are described 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 the alternatives discussed in this chapter are presented in Table 7.6-1 and shown in Figure 7.6-1. The table provides data on the individual reaches as well

as the values for the total average annual habitat for the full period of analysis from 1898 to 1997. 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 of the 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 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). The MCP provides an additional 95.1 acres (a 43.1 percent increase) of tern and plover habitat over the CWCP. An even greater amount of habitat is provided by the four options that constitute the range of changes added to the MCP to form the four GP options. These changes provide between 60.1 and 74.5 percent more total annual tern and plover habitat than the CWCP. Compared to the CWCP, the MCP increases habitat and the four GP options reduce habitat within the Fort Peck reach. Both the MCP and the four GP options increase this habitat downstream of Garrison, Fort Randall, and Gavins Point Dams.

Figure 7.6-1 graphically shows that there are four separate groupings of average annual habitat values. At 220.5 acres, the lowest value is for the CWCP. The next grouping includes only the MCP, which provides 43.1 percent more habitat. The third grouping constitutes the four GP options. One of the two Gavins Point Dam release components, the summer low-flow component, provides a pattern within this cluster. The low-flow 25/21 split season options (those ending with a 21 in the six-character option name) provide more habitat than the minimum navigation service flat release option (those ending with a 28 as the last two characters). Inclusion of the minimum service option increases habitat by 60.1 to 61.6 percent, and the 25/21 split option increases habitat by 67.8 to 74.5 percent over that provided by the CWCP. The fourth grouping includes one alternative referred to as the ROR, or Run-of-River, alternative. It has been

Table 7.6-1. 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
MCP	315.6	81.3	152.1	38.7	43.4
GP1528	356.4	28.7	205.0	52.4	70.3
GP2021	384.7	35.4	207.8	64.6	76.9
GP1521	370.0	36.0	193.5	66.4	74.0
GP2028	353.1	27.4	201.5	53.3	70.9

added to Figure 7.6-1 to show how much habitat would be provided if there was no control of the inflows into the Missouri River. Total average annual habitat increases dramatically to 584.7 acres, 165.2 percent over that provided by the CWCP, if flows are uncontrolled.

Figure 7.6-1 includes the values for the submitted alternatives addressed in Chapter 5 to provide some perspective as to how the GP options perform relative to the submitted alternatives. The GP options provide habitat similar to that provided by the two alternatives submitted by the USFWS for consideration: the BIOP and FWS30 alternatives. Because these two options include the 25/21 low-flow option, the habitat that would be provided is essentially the same as that provided by the corresponding GP options. This supports the general relationship that tern and plover habitat would generally increase as the summer flow decreases with all other factors held relatively constant.

Under the MCP, tern and plover habitat increase within all reaches downstream of the mainstem dams. An unbalanced intrasystem regulation among the upper three lakes, with greater conservation during the drought periods and higher service levels for summer releases throughout these drought periods, increases total tern and plover habitat 43.1 percent over the CWCP. Downstream of Fort Peck Dam, the MCP yields 61.6 percent more clear island sand bar habitat for terns and plovers than the CWCP. Compared to the CWCP, the MCP yields 55.4, 18.3, and 9.9 percent more tern and plover habitat downstream of the Garrison, Fort Randall, and Gavins Point Dams, respectively.

Tern and plover habitat increase under the GP1528 option, the potential starting point for the GP options, when the 15-thousand cubic feet per second (kcfs) spring rise and the minimum navigation service flat release at Gavins Point Dam are added to the MCP. Total habitat increases by an additional 12.9 percent over that provided by the MCP. Decreasing the summer flow from 34.5 kcfs to 28.5 kcfs (representing potential minimum navigation service flat release) is the primary factor affecting changes in habitat. This change results in a 64.7 percent decrease in habitat downstream of Fort Peck Dam compared to the MCP's value and an overall increase in habitat within the remaining downstream locations. Under the GP1528 option, the smallest percent increase in habitat (34.8 percent) occurs downstream of Garrison Dam while the largest percent increase (62.0 percent) occurs downstream of Gavins Point Dam. Tern and plover habitat increase 35.4 percent over the MCP in the reach downstream of Fort Randall Dam.

To provide a perspective for how habitat could change in the future if changes are made to the GP1528 option, the

following paragraphs describe the habitat changes relative to the GP1528 option. The greatest total percent increase in tern and plover habitat (a 7.9 percent increase over that of the GP1528 option) occurs under the GP2021 option. The GP2021 option has the 20-kcfs spring rise and 25/21-kcfs split summer release from Gavins Point Dam. This combination, when added to the MCP, increases habitat by 23.3 percent downstream of Fort Peck Dam, 1.4 percent downstream of Garrison Dam, 23.3 percent downstream from Fort Randall Dam, and 9.4 percent downstream from Gavins Point Dam. In summary, changing both the spring rise and summer low flow at the same time under adaptive management results in positive changes to all four river reaches with tern and plover habitat.

With a change in the summer low flow from minimum service to the 25/21-kcfs split from Gavins Point Dam, as with the GP1521 option, total tern and plover habitat increase an additional 3.8 percent compared to the GP1528 option. Habitat increases in three of the reaches (25.4 percent below Fort Peck Dam, 26.7 percent below Fort Randall Dam, and 5.3 percent below Gavins Point Dam) and decreases by 5.6 percent below Garrison Dam.

With a change in only the spring rise amount from 15 kcfs to 20 kcfs, as with the GP2028 option, total tern and plover habitat decreases by 0.9 percent compared to the GP1528 option. This overall decrease results from decreases downstream from Fort Peck and Garrison Dams (4.5 and 1.7 percent, respectively). Small increases of 1.7 percent and 0.9 percent occur downstream from Fort Randall and Gavins Point Dams, respectively.

The annual values of total tern and plover habitat for the CWCP, the MCP, and the four GP options are shown on Figures 7.6-2 through 7.6-4. Tern and plover habitat is highly variable during the entire period of analysis. The years with the greatest increase in habitat, between 1,200 and 1,600 acres, are 1920, 1935, 1953, and the mid- to late 1980s. The alternatives that provide the greatest amount of habitat during these periods include the GP1521, GP1528, and GP2021 options. While the GP1528 option generally creates some of the highest numbers of tern and plover habitat acres during the mid- to late 1980s, the other three options, the GP2021, GP1521, and GP2028 options, produce some of the fewest habitat acres, between 0 and 200 acres.

7.6.1 Tern and Plover Habitat for Four Tribal Reservations

Table 7.6-2 presents the average annual tern and plover habitat under the alternatives for four Tribal Reservations along two river reaches during the full period from 1898 to 1997. The Reservations analyzed include Fort Peck

Reservation, located downstream of Fort Peck Dam, and Yankton Reservation, Santee Reservation, and Ponca Tribal Lands, all located downstream of Fort Randall Dam.

Total tern and plover habitat associated with these Reservations is 83.1 acres. Changing the conservation measures during droughts, unbalancing the upper three lakes, and adding a spring rise at Fort Peck Dam, as with the MCP, increases total Tribal Reservation tern and plover habitat by 44.5 percent. Adding the 15-kcfs spring rise and a minimum navigation service summer flow instead of the full navigation service flat release under the GP1528 option decreases total habitat by 2.4 percent. Increasing the spring rise and decreasing the summer flow under the GP2021 option increases total habitat by 20.5 percent. Decreasing only the summer flow to the 25/21 split under the GP1521 option results in 23.4 percent more acres of habitat than provided by the CWCP. Finally, increasing only the spring rise to 20 kcfs under the GP2028 option results in the greatest decrease in tern and plover habitat associated with the Tribal Reservations, at 2.9 percent compared to the CWCP.

The MCP is the only alternative that increases tern and plover habitat within the Fort Peck Reservation; it creates 61.5 percent more habitat than the CWCP. The four GP options all reduce tern and plover habitat within this Reservation. The GP1521 and GP2021 options, both with the lower summer release from Gavins Point Dam, reduce habitat within the Fort Peck Reservation by lesser amounts, 28.4 and 29.6 percent less than the CWCP, respectively. The options with the greatest percent reduction are the GP1528 (3.0 percent) and the GP2028 (45.7 percent) options.

Within Yankton Reservation, Ponca Tribal Lands, and Santee Reservation, the MCP and the four GP options increase tern and plover habitat over the CWCP. The greatest increases occur under the GP1521 option (103.2 percent) and the GP2021 option (97.6 percent). The GP2028 option provides a 62.9 percent increase in tern and plover habitat over the CWCP. Compared to the CWCP, the GP1528 option provides nearly the same amount of tern and plover habitat increase as the GP2028 option (60.2 percent). The MCP provides only an 18.5 percent increase in habitat over the CWCP.

Table 7.6-2. Average annual tern and plover habitat (acres) for four Tribal Reservations.

Reservation	1898 to 1997					
	CWCP	MCP	GP1528	GP2021	GP1521	GP2028
Fort Peck	50.4	81.3	28.7	35.5	36.5	27.4
Yankton, Santee, and Ponca Tribal Lands	32.7	38.7	52.4	64.6	66.5	53.3
Total	83.1	120.0	81.1	100.1	102.5	80.6

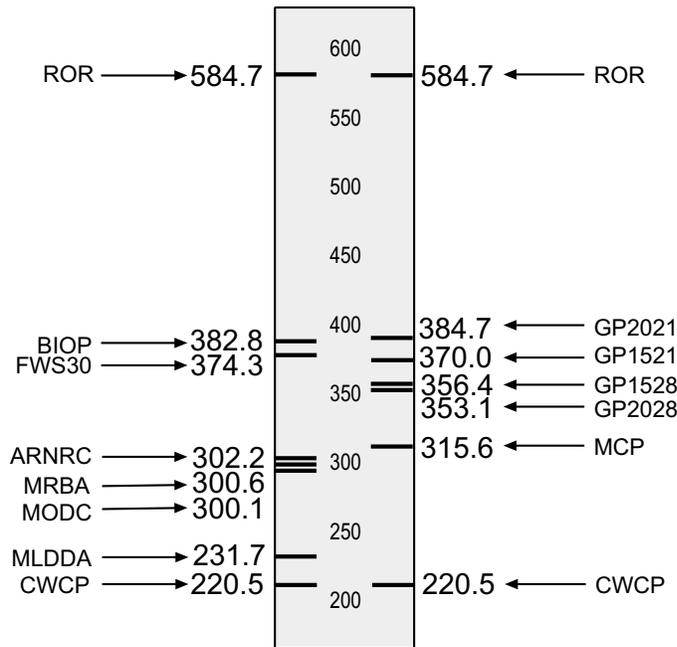


Figure 7.6-1. Average annual tern and plover habitat for the submitted alternatives and the alternatives (acres).

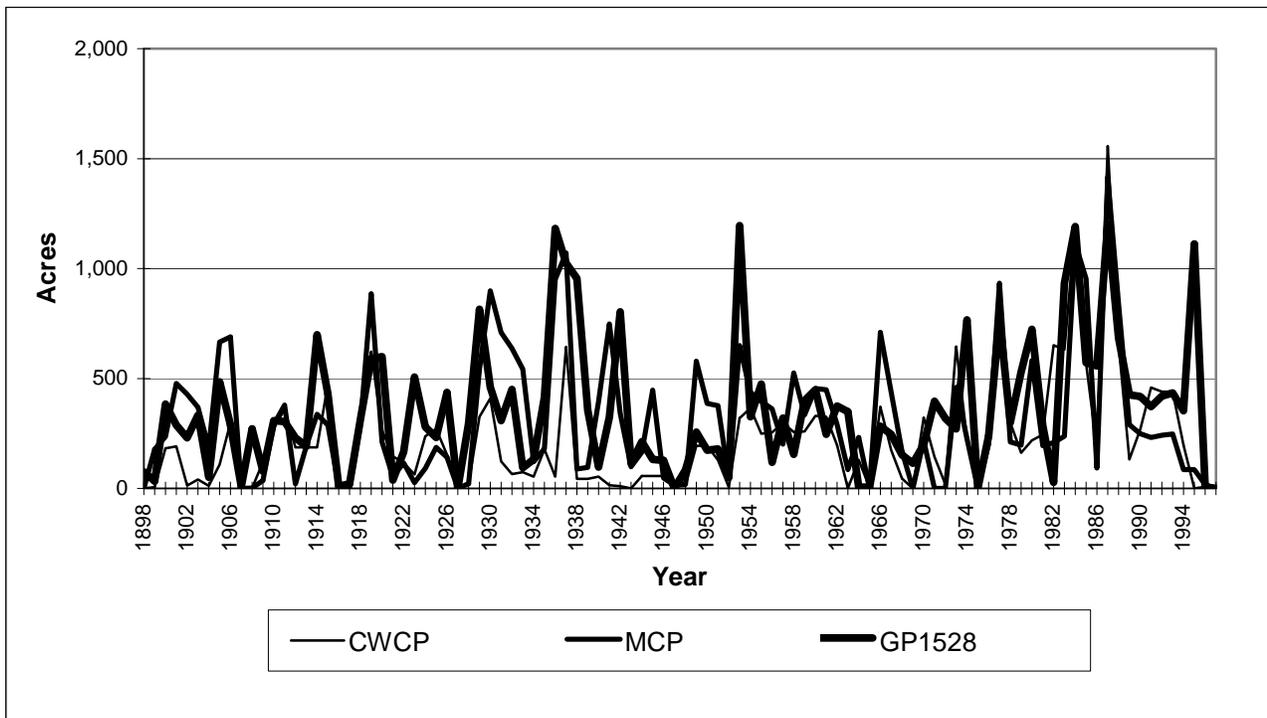


Figure 7.6-2. Average annual tern and plover habitat for CWCP, MCP, and GP1528.

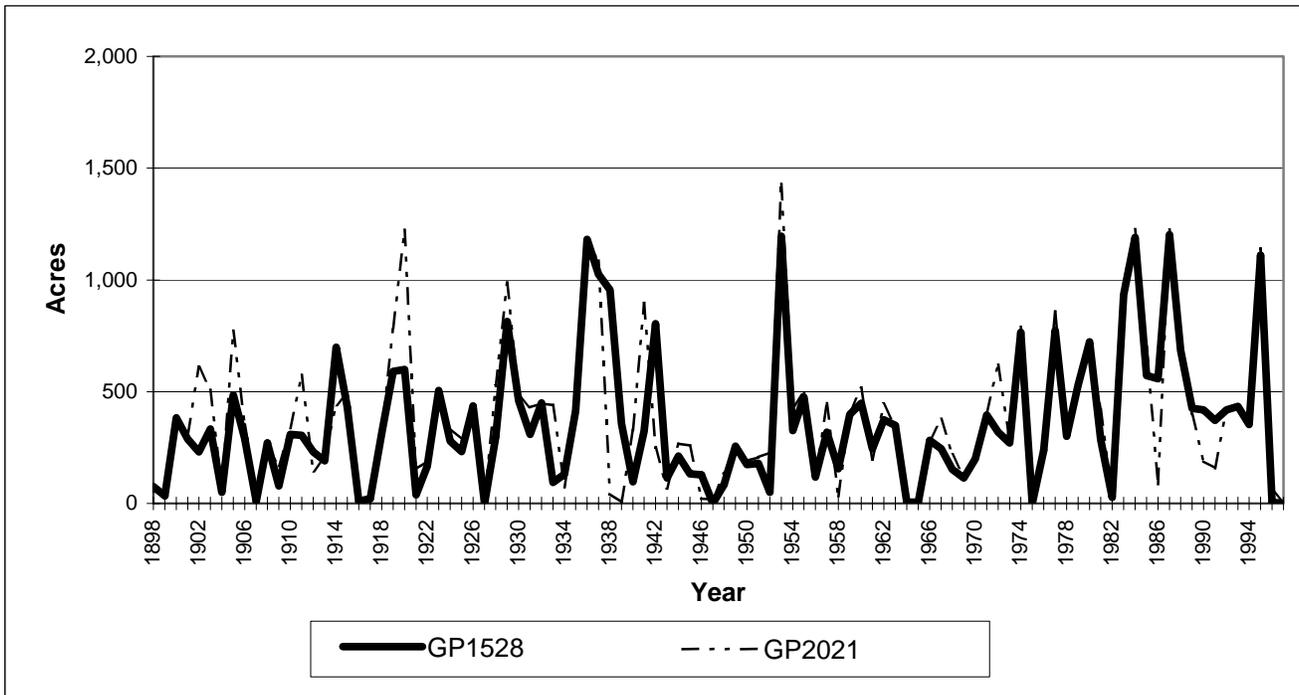


Figure 7.6-3. Average annual tern and plover habitat for GP1528 and GP2021.

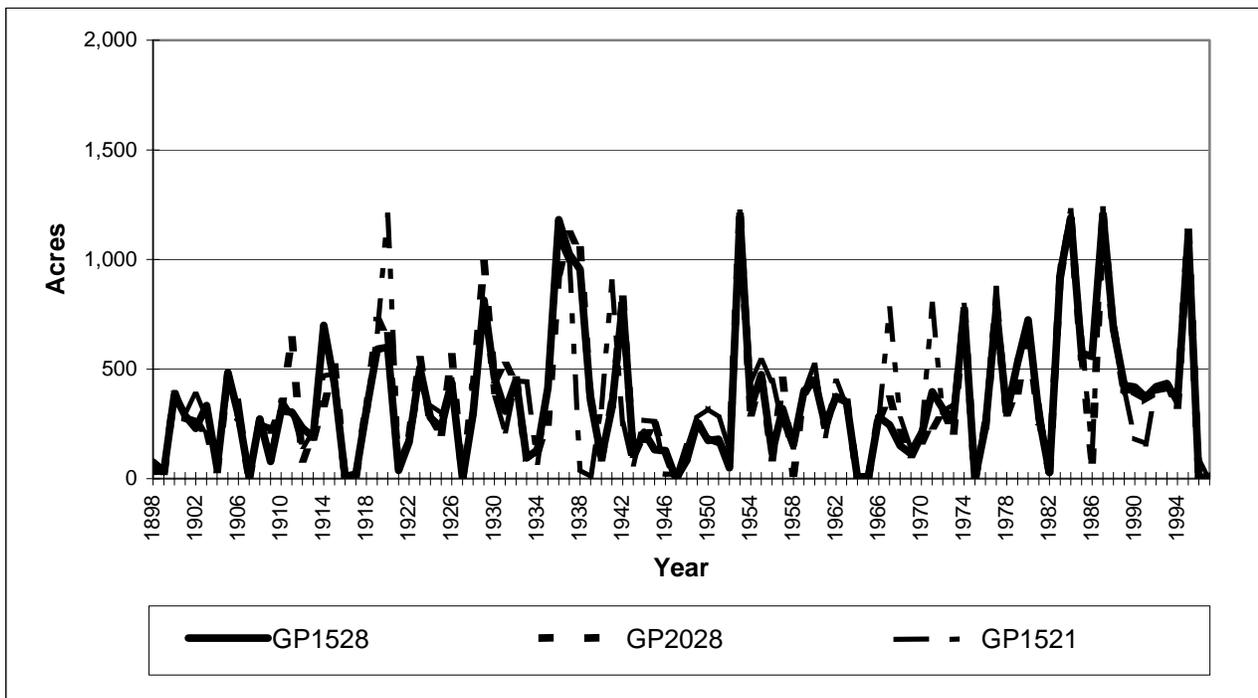


Figure 7.6-4. Average annual tern and plover habitat for GP1528, GP2028, and GP1521.

7 EFFECTS OF ALTERNATIVES SELECTED FOR DETAILED ANALYSIS

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