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LEAST TERN AND PIPING PLOVER
BIOLOGICAL ASSESSMENT
MISSOURI RIVER BANK STABILIZATION O&M
JULY, 1985

The Omaha District Corps of Engineers proposes to undertake maintenance of bank stabilization structures and streambank erosion control structures along the Missouri River. One project would involve about 50 repairs of revetments, hardpoints, and refusals along the Missouri National Recreational River (MNRR) reach, Gavins Point Dam to Ponca, Nebraska (river mile 810-750). The second project would involve about 250 repairs of dikes and revetments along the navigation channel from Florence Bend through Rulo Bend (river miles 627-498).

The interior least tern is being Federally listed as an endangered species. The tern has a history of use of the Missouri River, especially in the MNRR reach. The piping plover is proposed for listing as a threatened species in this area. The plovers exhibit nearly the same nesting and brooding requirements as the terns. This biological assessment is done to determine whether any adverse effect is likely to occur to the tern and plover as a result of the proposed work.

After consultation with several State and Federal wildlife agencies and after research of available material, we have reached an opinion of no effect on least terns and piping plovers.

Least Terns

Population. The Nebraska Game and Parks Commission has surveyed the MNRR reach for terns each year since 1978. Maximum population counts recorded each year on the 53-mile stretch surveyed were as shown below: [1]

1978	1979	1980	1981	1982
102	176	193	118	114

The terns are found in about 18 colonies on as many islands spread throughout the reach. This population represents probably the largest population of least terns in Nebraska. Other populations are to be found along the Platte River and Niobrara River in Nebraska. The MNRR population also is probably the largest population along the Missouri River's entire length. "The least tern was formerly a common breeder on the Missouri River ... from St. Louis, Missouri to Montana," according to the Fish and Wildlife Service (FWS).[2] However, due to channelization

and impoundment of the river over the great majority of its length, terns now are commonly found only on the MNRR reach and downstream of Garrison Dam in North Dakota. The North Dakota river population has numbered 90-130 in recent years. FWS determined that these existing populations are but a small remnant of past populations and must be protected to ensure the species' survival.[2] Terns are absent or rarely present in the river from Ponca, Nebraska down to Rulo, Nebraska, and no recent breeding accounts there are known. Pairs have been seen, but no nesting observed, on sandy beaches along the river in Monona and Harrison counties, Iowa.[3,4]

Nesting habits. The populations on the Missouri River are breeding populations which spend their winters in Central and South America and the Gulf States. The birds arrive in the project area as early as late April, but the common arrival period is early to late May.[3] They begin breeding behavior promptly and build nests and lay eggs in the late May to early June period. Egg laying seems to peak in the first week of June. Two months are needed for fledging the young, which occurs in mid to late July.[6]

The MNRR birds nest in colonies of 1 to 20 pairs on mid-river sandbars or islands. They may also rarely use sandy shorelines. The sandbars or islands used are sandy, and the preferred nest sites are open areas, basically unvegetated, with some short sparse vegetation available on the same island or sandbar for cover. The nest is a simple scrape in the sand, sometimes lined with shells or pebbles. Eggs number about 3 to a clutch and are incubated for about 21 days before hatching.[5]

Within a few days of hatching, chicks are mobile and may leave the nest to take cover from the sun under nearby vegetation. Flight stage is reached in another 20 days, but the adults continue to feed the young for some time. The terns then gather in small flocks and feed along streams, and around lakes, ponds and mud-flats, before departing in about mid-August.[5]

Much concern has centered on the loss of suitable nesting habitat. Channelization and impoundment of the Missouri River have eliminated many islands and sand bars and thereby have eliminated tern nesting along most of the river. Furthermore, changes in the flow regime of the river are considered responsible for declining availability of suitable nesting habitat. The apparent need for sandy, unvegetated island areas has been noted above, and the present-day lack of scouring action or of no-flow periods may increase vegetative growth.[1,2,5,7]

Food. The least terns feed on small fish, such as shiner "minnows" and chubs. The young birds are presumed to be fed these same food items. Ponds, oxbow pools, streams, and the river itself can serve as food sources. The food species are able to survive even low-flow or no-flow conditions in certain

Platte River situations and may do so on the Missouri River as well.

Tolerance. Least terns are not as shy of human activity as, for example, bald eagles. When nesting, the birds will rise from their nests when pedestrians approach within 80 meters. They will dive at intruders, but do not abandon nests which have been examined by researchers. They do abandon nests upon serious disturbance by recreationists, or after flooding or other natural calamity. They are more tolerant of boats than of pedestrians. It is unclear whether re-nesting is common.[5]

Piping Plovers

Population. The Fish & Wildlife Service states that the plover occurs sparingly in Montana and on the Missouri River in South Dakota. They report an estimated 500 pairs in North Dakota, 100-300 pairs in Nebraska, and virtually none in Iowa.[8]

On the Missouri River, the plovers occupy approximately the same habitat as the least tern and may be somewhat less abundant than the tern. The plovers occupy virtually the same island habitats as the terns; Corps personnel reported that on a brief 1985 visit to several islands, plovers were seen at every site where terns were seen.[9]

Nesting habits. As with least terns, the river's plovers are breeding populations. They arrive a bit earlier than the terns and begin nesting about a week before terns. Their brood cycle therefore starts and progresses a bit earlier than for terns, but it is completed at about the same time.

The plovers nest in colonies on islands and sandbars, and along shorelines having little vegetation. Their preferences are very similar to those of terns except that the substrate can be a bit rockier than the sand preferred by terns; also, the vegetation can be a bit more developed, and plover nests therefore can be found a bit further from the water on slightly higher ground.[10] Nests are shallow scrapes sometimes lined with pebbles, and 4 eggs are usually laid.[8] Hatching & fledging times are similar to the terns'.[10]

Plovers are subject to the same nesting habitat losses as are terns: channelization, impoundment, water level fluctuations, and vegetation encroachment.[8]

Food. Plovers feed on terrestrial or aquatic invertebrates found primarily along wetted shorelines.

Tolerance. Plovers seem fairly tolerant of mild temporary disturbance, preferring to run away rather than take flight. Recreation and other serious disturbance, however, are sometimes

primary causes of population declines.

Project Description

The navigation channel O&M project would involve placement of stone in and along existing dikes and revetments, or along the natural bank or bed of the river, in repair and replacement of stone removed by wear and tear on the old structures or on existing bankline. The repair totals 27,000 linear feet (l.f.) of stone fill revetment and 12,000 l.f. of stone fill dike. The contract was awarded June 3, 1985 and work is to be completed by December 1985. All material would be placed from floating plant equipment.

The MNRR project would involve placement of stone in and along existing revetments, hardpoints, and refusals in repair and replacement of stone removed by wear and tear on the old structures. FY 1985 work would total 1,580 l.f. and future planned work would total a further 3,405 l.f. All material would be placed from land based equipment.

Impacts

The navigation channel work is expected to have no effect on terns or plovers because terns and plovers are not predictably present or are in fact absent from that reach, and no impact on sandy beaches is expected. About 2.9% of total shoreline would be involved in the proposed work.

The MNRR reach work would involve about 0.8% of total shoreline in that reach. Fifteen of the repair sites are within 1/2 mile of tern/plover colony sites, and six are within about 100 yards or are immediately adjacent across a channel of the river.

Disturbance. The birds could be affected by the activity of the work personnel. However, the work will be performed only during times outside the May 15 - July 15 breeding period. Therefore, no activity disturbance is expected.

Habitat destruction. All work in the MNRR reach will be repair of existing rock structures. Therefore no placement of rock on sandy areas or other areas suitable for tern or plover use will occur. Also, such suitable nesting areas will not be physically disturbed by the rock placement equipment during performance of the work.

The rock when in place will constitute an extremely small portion of total shoreline and so will not by itself affect the flow of the river or the process of erosion/sedimentation sufficiently to affect the habitat.

However, further consideration must be given to the cumulative effect of this and reasonably foreseeable related work, which would include future O&M on other segments of this reach. This in effect means a need to consider the effect of maintaining the entire existing bank protection system in the reach. It has been reported that the total extent of bank protection measures in the MNRR reach is about 83,000 feet, or 14% of the total bankline in the reach. This portion is large enough that it conceivably could have an effect on islands.

Records show that terns and plovers are using virtually every available island complex in the reach. This indicates that the number and size of islands could be a limiting factor, and any diminution in available area there could be an adverse effect.

Hypothetically, bank stabilization could reduce available nesting area in a number of ways. It could divert flows so as to cause erosion of nesting areas without causing replacement areas to form. Or it could enhance degradation and the exposure of islands and thus encourage vegetative encroachment. Also it could prevent erosion of river banks and deprive the river of the sediment load needed to form these sandbars and islands.

Regarding possible erosion of islands by diverted flows, available evidence indicates that such an effect will not be substantial or distinguishable from other effects on the islands. A preliminary examination of aerial photos before and after construction of the existing bank stabilization project indicated that islands have undergone dramatic changes even upstream of bank stabilization measures. This indicates the dynamic nature of islands and the major forces affecting them. Therefore, any tendency of project-induced minor flow deflection to affect islands would probably be overwhelmed by the ongoing dominant process of island migration and transmutation. Regarding sediment load, uptake of sediment to compensate for sediment restrained by the rock work would occur over many miles of river, not just the immediate MNRR reach. As for degradation, any tendency toward enhanced local degradation would likely be overwhelmed by ongoing dominant degradation trends which are in effect from Gavins Point Dam down through the navigation channel, and which are the result of the dam and not of bank stabilization measures. Studies indicate that degradation in the navigation channel has not been enhanced by bank stabilization there; degradation is rather uniform throughout the channelized and unchannelized reaches. The dam, and channel constriction in the channelized reach, are the factors primarily responsible for the degradation.

Therefore, it is felt the cumulative effect of maintaining the existing project would not be of such a scale that it could be distinguished from the larger influences of river dynamics and degradation given the available information. Future large

additions of bank stabilization work in the reach would merit more study of its effects on islands.

In light of the information discussed in the preceding sections, we expect the project to have no measurable effect on the least terns or piping plovers.

7/23/85 Steve Rothe
Date Steve Rothe
Environmental Resource Specialist

Sources Referenced

1. Nebraska Game and Parks Commission, unpub. data., 1978-1982.

2. U.S. Fish and Wildlife Service. Federal Register, Vol. 50, No. 102, May 28, 1985.

3. Wilson, James, Ph.D. Missouri Dept. of Conservation, Pers. comm. June 17, 1985.

4. Roosa, Dean. Iowa Conservation Commission. Pers. comm. June 17, 1985.

5. Ducey, James, Interior Least Tern. Compiled for Fish and Wildlife Service, Pierre, South Dakota. August 20, 1981.

6. Dinan, John. Nebraska Game and Parks Commission. Pers. comm. October 12, 1984.

7. EA Engineering, Science, and Technology, Inc. An Evaluation of Historical Flow Conditions in the Platte River as Related to Vegetation Growth and Habitat Use by the Endangered Whooping Crane and Bald Eagle and the Threatened Interior Least Tern. September 1983.

8. U.S. Fish and Wildlife Service. Federal Register, Vol. 49, No. 218, November 8, 1984.

9. Patenode, George. Missouri River Division, Corps of Engineers. Pers. comm. July 1, 1985.

10. Anderson, Maurice. U.S. Fish and Wildlife Service. Pers. comm. October 1984.