

UNITED STATES GOVERNMENT

Memorandum

TO : District Manager, Arizona Strip

DATE: March 7, 1977

FROM : Neal M. Middlebrook

SUBJECT: Report No. 1 - 1976 Breeding Bird Survey -
Mt. Trumbull and Toroweap Valley

The 1976 Breeding Bird Survey of the Toroweap Valley and Mt. Trumbull Region has concluded. Five study areas were surveyed using the spot map method as outlined by Kendeigh. The following data was collected:

<u>Study Areas</u>	<u>No. of Species</u>	<u>No. of Species *1)</u>	<u>No. of Species *2)</u>	<u>Breeding Pairs/100 Acres</u>
Ponderosa Pine	12	11	7	92
Mature Pinyon-juniper	13	3	16	135
Island Chained Pinyon Juniper	14		10	145
Chained Pinyon Juniper	15		15	
Toroweap Grassland Area	2		6	51
Monument Semi-Arid Range	3		5	44
Monument Sage Area	3		13	44

*1) Known to breed in this community, but off of the Study area.

*2) Species that utilize the community for other purposes than nesting.

CONCLUSIONS

Bird Study

The data indicates that the mature Pinyon-juniper is the more diverse species wise and has higher breeding densities than the Ponderosa Pine Study Area. Other breeding bird surveys from similar areas show the opposite to be true. The study plot selected is not a pure Ponderosa type as suggested by Mrs. Riffey, and many of species censused reflect affinities of Pinyon-juniper community. It is suspected, if a pure Ponderosa pine type with an adequate buffer strip are surveyed, the results would be the same as other areas.



The chained Pinyon-juniper areas display an influx of early successional species typical of a recently disturbed site. The increase in abundance of granivorous species is thought to be the main difference in breeding densities between mature and treated Pinyon-juniper communities.

The low breeding densities and species diversity in grassland and sage types are typical of communities with uniform structure, which reflects a reduction in available niches.

Each study plot was analyzed vegetatively by 100 point pace transect method and a plant checklist for each area was compiled.

Next year's survey will incorporate two additional study areas - a grassland and sage type off of the monument.

RECOMMENDATIONS

1. A more detailed analysis of the vegetation is needed to document specific habitat requirements of each species.
 - a.) The percent crown cover on the Ponderosa pine and mature pinyon-juniper study plots should be related to species use patterns. Emlens method for determining canopy cover Ecology 48: 158-160, is used by many researchers.
 - b.) The line intercept or Daubenmire quadrat method might be employed to give density information; also, if permanent transects were established changes in succession could be detected.
 - c.) The height of major trees, shrubs and grasses in their applicable study plots should be measured and related to bird use.
2. Each of the nests located should be catalogued according to:
 - a.) Vegetative species nested in
 - b.) Height of nest and total height of shrub or tree utilized.
 - c.) General structure of surrounding habitat; approximate tree, shrub and grass height, HT to canopy, and thickness of canopy used.
 - d.) DBH should be recorded for tree and cavity nesters.
 - e.) Soils, elevation and exposure

Intensifying methods of data collection will allow us to establish foraging and nesting guilds for each species and define factors in the community which birds are keying on.

Nesting Guilds

- Guild 1: Nests are built of small twigs on small branches in the canopy.
- Guild 2: Nests built in large forks with large twigs in or below the canopy.
- Guild 3: Species nesting in shrubs.
- Guild 4: Hole nesters.
- Guild 5: Ground nesters.

Feeding Guilds

- Guild 1a: Gleaning in the canopy.
- Guild 2a: Gleaning in the canopy and shrubs.
- Guild 3a: Feeding in the shrubs only.
- Guild 4a: On and under bark
- Guild 5a: Fly catching below the canopy.
- Guild 6a: Continuously on the wing.
- Guild 7a: On the ground.

Correlation of gross structural features with the composition or density of bird populations will enable use to extrapolate density and species diversity of similar habitats on the Arizona Strip.

The Shannon-Weiner Diversity Index function is to be used to compare diversity and density information in each habitat type.

By collecting structural data along with population data, alike bird communities can be identified.

For example, if several tracts of Ponderosa pine were scheduled to be logged, and Wildlife personnel before entering the field knew that the most diverse wildlife communities in this type had 100 to 300 trees/acre and a 6" to 10" DBH, a more sound MGT decision could be made on which tracts to cut.

3. As the study progresses additional parameters may be investigated as time and funding permit.

- a.) Nesting success and mortality
- b.) Size of territories by species and an in depth analysis of vegetative structure.
- c.) Mammal and reptile inventories
- d.) Limiting factors in each community

This report is on file in the District library if more detailed information is desired.

Neal Middlebrook

NMIDDLEBROOK:emg

cc: District Personnel