

PLANTS OF OKLAHOMA LAKES

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A study of the plant life of Oklahoma Lakes was initiated on June 1, 1948. The investigational plan was worked out with Dr. John G. Mackin, formerly limnologist with the Oklahoma Biological Survey. Acting in accordance with his suggestions, we selected lakes from every section of the state and with as diverse physical, chemical and biotic conditions as possible. We have visited fifty lakes and studied thirty-two of these in some detail. The lakes studied were distributed throughout the state of Oklahoma as follows: Eastern (94.5°W — 96°W), eight; Central (96°W — 98°W), nine; Western (98°W — 100°W), nine; and the Panhandle (100°W — 103°W), six.

The following data were produced for each lake during the summer of 1948 and 1949:

1. History (including previous water levels)
2. List of communities
3. List of species
4. Water depths for communities and species
5. Phenology of species

LIST OF COMMUNITIES. Except for the recent impoundments, all the lakes showed excellent zonation usually, but not always, as follows: terrestrial, wetland, emergent aquatic, floating-leaved aquatic and submerged aquatic zones. In one case, there was a pleustonic community of duckweeds and floating fern. The greatest number of communities observed on one lake was seven, on Salt Plains Reservoir, probably due to the fact that the northeast portion was relatively fresh, whereas the southern edge was moderately salty. The total number of well-defined communities was 50, a surprising diversity of vegetation types. Of the total, one-half were aquatic communities, but the annual weed and cottonwood-salt cedar-willow communities were the most widespread.

LIST OF SPECIES. The list of plants growing along the shorelines included 290 species as of September 1, 1949. Of this list 20 per cent are terrestrial, 50 per cent are wetland and 30 per cent are aquatic species. Although the wetland list includes a greater number of species, it is probable that the aquatic vegetation comprises a greater number of individual plants and a greater oven-dry weight of material. The present list of species includes between 5 and 15 species new to the State of Oklahoma. Since not all the specimens have been checked by our taxonomists, the exact number of new species will not be known for some time.

PHENOLOGY OF SPECIES. The plants along the shorelines vary greatly in phenology. In general, many submerged aquatic plants (especially in the spring-fed lakes) vegetate throughout the winter and initiate flowering in April or May. The floating-leaved and emergent aquatics include many species which vegetate during the winter, but the wetland and especially the terrestrial species include very few species with green leaves during the winter season.

A greater percentage of the species observed (from June 1 — August 15) were in leaf (only) in June than in July or August but an increase in vegetative activity occurred in August due to the germination of seeds along the shoreline subsequent to natural recession of water levels in July. As might be expected, a greater percentage of the total list of species was in flower during June and a progressively higher percentage of species attained the fruiting stage during July and August. A considerable amount of work is needed before a phenological calendar can be formulated.

FUTURE PLANS. The initial survey of plants on Oklahoma Lakes should be completed by the end of the 1950 growing season. Our program for the summer of 1950 will be similar to that pursued during the summers of 1948

and 1949 but more attention will be given to the maximum depths at which the various aquatic species survive. If our investigations continue as scheduled, we hope to make a comprehensive report on the initial survey during the winter of 1950-51. This report will include a list of plant communities, a list of all terrestrial, wetland, and aquatic species within the confines of the lakes (below the uppermost drift lines), a list of species new to the state, the geographical distribution of plants in the lakes, the phenology of all species encountered, the maximum water depths for all species and the effects of water level fluctuation on the survival and invasion of plants. In the more distant future it is hoped that investigations may be undertaken to determine the effect of lake plants on the production of mosquitoes, fishes, mammals and waterfowl.
