Fishing is an enjoyable pastime that has been around for thousands of years. In the past century, fishing has been extensively studied. The results of those studies provide real-life empirical data about best-practices for stocking lakes. These studies form the basis for our recommendations.

Our Assumptions:

- The lake is free of contaminants. Additionally, the lake will remain in this state for the foreseeable future.
- No pre-existing fish populations. However, the lake has sufficient base biomass, such as plant material and aquatic invertebrates. The lake is thus able to support fish species typical to Iowa's climate.
- Self-sufficiency implies a sizable population that will not become extinct due to periodic fluctuations (therefore no restocking is required).
- The goal is to create a sustainable sport-fish population. Human activities associated with this population will consist solely of fishing and maintenance.

Our Plan:

Following the recommendation of the Iowa Department of Natural Resources, we will stock the lake with bluegills and largemouth bass, a classic predator-prey combination. Channel catfish, a spectator species, can also be added.

We recommend the lake be stocked with 1000 bluegills per acre and optionally 100 catfish per acre in October. The following June, the lake should be stocked with 70 bass per acre. Also, a population of fathead minnows may be stocked (30 lbs/acre) with the bluegills and catfish. This will help the fish thrive, but is not required and may be omitted to lower costs.

After the initial stocking, fishing for bluegills may begin in two years, catfish in three, and bass in four. Since bluegills are by far the most plentiful species, a harvesting limit is not necessary, but maintaining a minimum size may be advisable. No more than 15 bass per acre per year should be harvested, and a minimum size of 14 inches should be enforced. No more than 15 catfish per acre per year should be harvested, but no minimum size is necessary. This means at most 1,800 bass and 1,800 catfish may be harvested per year.

The bass and bluegill populations are self-sustaining, while the catfish population is not. The initial stocking of all three species should be done with fingerlings (young fish, 1-2 inches in length), and the catfish population should be restocked every 2-3 years with 100 6-8 inch juveniles per acre to sustain the population. If the bass and bluegill populations become unbalanced, corrective measures should be taken. The minnow population is inconsequential.

Additional maintenance will include periodic monitoring, preservation of watersheds, and possible restocking due to accidents or natural disasters. Other actions, including forestation of watersheds and species diversification, will further increase stability and lake health. Initially, stocking with bass and bluegill will cost up to $41,000. Minnows will cost approximately $27,000. Catfish will cost $4,800 initially (4-6 inch juveniles instead of 1-2 inch fingerlings) plus approximately $4,800 every 2 to 3 years for restocking (ignoring inflation).

By the fifth year, the bluegill population will have stabilized at approximately 250 lbs/acre, and the bass population will have stabilized at 50-75 lbs/acre; while as stated above, the catfish population is not self-sustaining and will vary according to the timing of the previous restocking. Based on average weights, this means there will be approximately 1,250 bluegills/acre (150,000 bluegills total) and 25-37 bass/acre (3,000-4,500 bass total). The ten and twenty-year populations for all three species should be similar with minor fluctuations.