

during the severest winter weather, never falls below 50°. This is really a spring temperature, and I have with my own eyes seen small shrimps reproducing in winter as well as during the other seasons of the year. I doubt whether there is any other place as highly favored by nature for raising salmonoids, and also cyprinoids (tench, barbel), and crawfish.

Where the small shrimp is not found and the water contains particles of lime, attempts should be made to introduce it and favor its reproduction.

53.—AMERICAN SILVER PERCH, OR CALICO BASS.

By GILBERT DUCLOS.*

M. Emile Bertrand has recently sent to the Fish Culture Establishment of the Zoological Garden of Acclimatization a number of American silver perch, or calico bass (*Pomoxys sparoides*), born in a pond belonging to him in the vicinity of Versailles.

The reproduction of this species in 1888 was very considerable, for not only the three-year-old fishes, but even those born in 1887 have yielded an enormous number of eggs from which young calico bass were developed. The three-year-old fish living in M. Bertrand's pond are now about $7\frac{7}{8}$ inches long and $2\frac{3}{4}$ inches deep. The first spawning fish were imported directly from America. M. Bertrand had 25 of them. On account of the fatigue of the voyage only two males and a number of females survived.

The spawning of the first year, 1887, yielded M. Bertrand more than 500 fry, some of which were given to various members of the Acclimatization Society; others were sold. The flesh of the calico bass strongly resembles that of our European perch (*Perca fluviatilis*). After the spawning of 1888 M. Bertrand estimated that he had many thousands of calico bass. At the time of spawning, more than a hundred nests have been observed which have been placed in water about 8 inches deep. Evidently this species loves heat. The spawning places most sought after for the nests were the stone steps descending into the pond. The water being shallow the steps receive the sun's rays, retaining the heat to the advantage of the fishes.

The adult fish does not fear the cold. M. Bertrand, desirous to learn whether the calico bass would thrive in impure waters, placed a number of the young in a little pool which received waters full of impurities, and of which the temperature rose to above 77 degrees Fahrenheit. In spite of these unfavorable conditions the calico bass have prospered and have increased rapidly. Individuals which were $\frac{1}{4}$ of an inch long in April, when they were placed in this pool, measured $3\frac{1}{4}$ inches in the following August.

*La Perche Argentée d'Amérique ou Calico Bass. From Revue des Sciences Naturelles Appliquées No. 1, January 5, 1889, p. 12. Translated by Dr. T. H. Bean.

The calico bass will be an excellent addition to our waters, for not only is it very hardy but also very fertile; besides, its rapid growth and the good quality of its flesh make it an altogether desirable species. It will be very serviceable, also, as food for the *Salmonidae*, on account of its remarkable fecundity. Its introduction into waters already stocked will cause no inconvenience, for, although it is predaceous, the calico bass has a mouth so small that it can seize only little animals, worms, small crustaceans, etc.

M. Bertrand, desirous of propagating this very interesting species, placed again this year at the disposition of the members of the National Acclimatization Society some of the young. These young fishes will be delivered about the month of April.

54.—A HYBRID BETWEEN THE LAKE TROUT AND BROOK TROUT.

By TARLETON H. BEAN.

The Pennsylvania Fish Commission has been experimenting for some years, at the Corry Station, with hybrids between the lake trout, *Salvelinus namaycush*, and the brook trout, *Salvelinus fontinalis*. A very brief account of the experiments is to be found in the report of that commission for 1886. Some fine specimens of these artificially produced hybrids have been received by the U. S. Fish Commission. A large one measuring about 20 inches in length is apparently a male as the lower jaw has a small cartilaginous tip. The end of the maxilla extends behind the eye a distance nearly equal to the length of the snout. The scales are larger than in the brook trout and about equal in size to those of the lake trout. The caudal is deeply forked, about as deeply as that of the lake trout. In shape the hybrid is similar to the lake trout, as, also in the general pattern of coloration; but the very numerous spots on the sides are somewhat smaller and a pale lemon in color instead of whitish. The spots below the middle line of the body have a center of orange. The pectorals, ventrals, anal, and the lower lobe of the caudal have a broad white edge. The ventrals and anal are a pale vermilion orange. The outer half of the upper surface of the pectorals is dusky. There is a narrow black line limiting the white of the ventrals and a similar trace bounds the white of the anal. The ground color of the sides is greenish-olive. The sides of the head have numerous spots of lemon-yellow, some of them larger than the largest of those on the sides. The lips are yellowish flesh colored; the eye is golden, with a dusky border; the top of the head and back have some scattered vermiculations like those of the brook trout, but much less developed and not so plentiful. The caudal and dorsals are spotted with lemon-yellow, like the sides.

A smaller one, supposed to be a male, has the back slightly elevated as in old male brook trout, but its caudal is forked and it has the large scales and peculiar coloration of the hybrid.