AN HISTORICAL REVIEW OF FRESHWATER FISH HATCHERIES IN NATAL

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AN interest in trout angling stimulated the necessity to construct the first fish hatchery in Natal in order to hatch and rear trout ova imported from the northern hemisphere. Full credit must be given to the past efforts of the late Mr. J. C. Parker, who lived on the farm "Tetworth", situated in the Karkloof area near Howick. His original hatchery consisted of a water furrow on Tetworth, in which hatching boxes were placed to attempt hatching brown and brook eggs in 1881.

Mr. Parker conceived the idea that the stream on his farm, and others nearby, were very similar to trout streams in Yorkshire his home country. As he was a keen angler and naturalist, the thought of having trout fishing on his doorstep prompted him to write to the editor of a British magazine, "Field", in 1881, requesing advce on introducing trout to Natal. His letter was redirected to Sir James Maitland, who owned a trout hatchery, Howietoun Fisheries. Sir James in turn dispatched 10000 ova free of charge on a Castle Line steamer to Mr. Parker. These arrived in Durban in March 1881.

The boat trip to Durban took nearly five weeks, and the ova were then sent from Durban to Pietermaritzburg by rail. They were taken to Tetworth, but most of the ova were dead on arrival and only 10 hatched out. These fry only lived a short while, so the operation was a disaster.

In 1883, Sir James Maitland sent another free consignment of 10 000 ova, but again there were no survivors because of the long voyage.

Trout ova had, nevertheless, been successfully transported as far south as New Zealand about 20 years previous to this so Mr. Parker pursued his import efforts.

A government committee was then formed in 1889 to investigate and advise on the introduction of trout to Natal. The commitee was composed of Mr. Parker, Colonel Vaughan and Mr. Cecil Yonge. They were given a government grant of £500, and contributions from the public added an additional amount towards this purpose. Mr. Parker then looked for a more suitable hatchery site and decided on a stream on the farm Boschfontein in the Balgowan area.

A further introduction of 3 200 brown and brook trout ova was made in 1890 from Solway Fisheries in Scotland and in March of that year the first successful hatching occurred at Boschfontein. The fingerlings which were produced were stocked in the Bushmans, Umgeni and Mooi rivers, and introductions proved successful in the first two mentioned rivers. The Mooi river was stocked too far down for the trout to survive.

Boschfontein hatchery did not prove very successful as water temperatures were too high. Mr. Parker therefore made a cooling unit composed of an insulated wooden box with 25,5 m. of 25 mm. diameter lead pipe coiled inside the box. Ice was packed inside the box and this reduced the water temperature from 18°C to 8°C as it flowed through the lead pipe at a rate of 136,5 ℓ per minute. A 24 hour supply required 227 kg. (5 cwt.) of ice. This had to be railed up from Pietermaritzburg every day, so the hazards which had to be overcome were numerous.

Ova introductions were again made in 1891 and 1892 and were hatched at Boschfontein. During these three years 9 098 trout fingerlings were introduced into Natal streams. Hatching operations then ceased until 1899, when Mr. Parker built a bigger hatchery with government funds. This hatchery was built on his farm Tetworth, but

this time on the Jackson stream, which was bigger than the stream used for his first attempt. A weir was built across the Jackson and water was diverted to seven wooden troughs. The troughs, which were 2,1 m. long, 46 cm. wide and 25 cm deep, were placed in series with water running out of the end of one trough and splashing into the one below.

Silt accumulations created problems so he filtered the water through perforated zinc and flannel material. A grille of narrow glass plates, which were set vertical and parallel to each other approximately 3 mm. apart, was placed on the bottom of the trough. Fertilized eggs were spread on top of the grille so as to keep them out of the silt which accumulated on the bottom of the troughs. After the ova had hatched and the alevins had absorbed their yolk, the fry dropped down between the glass strips to the floor of the trough and the grille would then be removed. Fry were fed on boiled egg yolk and finely minced lean beef.

In 1900 the hatchery was enlarged and sunken raceways were built close to the trough site. Each raceway was 9,12 m. long, 1,2 m. wide and 1,2 m. deep. Fish were reared in the raceway to provide brood stock so that the colony could become independent of imported ova, which was then being obtained from Jonkershoek hatchery in the Cape.

Rainbow ova were first introduced to Natal from Jonkershoek in 1899 and hatched at Tetworth. The first stripping of local rainbow and brown trout was done in 1903 but this was only on a small experimental scale and 4 390 rainbow and 520 brown eggs were stripped. In 1904 large numbers of fish were stripped and 4 734 rainbow ova were hatched. Losses were fairly severe, mainly because water temperatures were too high, and 1 584 rainbow fry and 50 brown fry were eventually distributed. Most of the present trout streams were stocked by 1904 and the first record of stocking dams was in 1903. Merthley lake at Greytown received 200 rainbows in that year.

Stripping from brood stock was not very successful at Tetworth because the hatchery was situated at too low an altitude ($\pm$ 1 200 m.) and water temperatures were often critically high. Parker mainly reared ova imported from Jonkershoek hatchery and continued with this method until 1907.

Parker's production figures for the first separate years could not be obtained, but the first three combined years of trout hatcheries in Natal (1890-1892) produced a total of 9 098 fingerlings. In the years 1899 to 1903, production figures were 2 275, 2 450, 1 720 and 2 500 fingerlings, respectively, from imported ova. The first large stripping from local fish occurred in 1904 when 1 584 rainbow fry and 50 brown fry were produced at Tetworth hatchery.

The large numbers of trout which were hatched and reared at Tetworth is astounding considering the not too favourable conditions, and the success achieved can only be attributed to the perseverance of Mr. Parker. The work which he did in acclimatising trout in Natal and which served the purpose of providing additional sport fishing in many rivers which previously did not contain fish of angling importance was given due recognition. As a tribute to the work which Mr. Parker had done, he was presented with a silver tea service and gold wrist watch in 1904 by the Prime Minister, Sir G. M. Sutton.

From 1907 to 1926 trout ova were imported from Jonkershoek hatchery and hatched in small perforated boxes which were placed in gravel beds in the rivers. Fry were then liberated from the hatching boxes into the rivers.

In 1917 a small hatchery started operations at Estcourt on the Bushmans River, on the farm Sheba's Breast. It was run by Mr. Norgate, and the hatchery continued producing until 1923, when he died. Norgate imported ova which were hatched in

wooden troughs 2,4 m. long, 37,5 cm. wide and 37,5 cm. deep, and rivers were stocked with small fry.

A bigger hatchery was built in 1924 at the Estcourt Water Works by the Town Engineer, Mr. M. E. Rodel. He supervised the hatchery besides attending to his borough duties. This hatchery was composed of a large water filter bed, four wooden hatching troughs and three concrete raceways which each measured 91 cm. by 37 cm. by 37 cm. Rainbow and brown trout ova were imported from New Zealand and Scotland, with about 10 000 ova being imported on each occasion. Approximately 50% survival was obtained from their hatching.

Mr. Rodel died in 1930 but his son, Archie, continued the hatchery operations until a lack of funds in the 1932 depression forced them to close down the hatchery. In 1935 the hatchery was again put into operation but never proved as productive as in the previous years, and closed down permanently shortly thereafter. Silt accumulations created severe problems at the Estcourt hatcheries, due to erosion of the Bushmans river catchment area. Rodel's first hatchery was nevertheless very productive and rivers were stocked as far afield as Underberg with fish up to 100 mm. long. Fingerlings were transported in milk cans with ice to cool the water.

Two circular ponds were made in 1946 at Underberg on the present hatchery site. At first ova were imported from the Jonkershoek hatchery, then additional ova was obtained from trout which were trapped in the rivers during the winter. Ova were hatched in trays in a nearby stream. Mr. Les Acutt, who was the local fisheries inspector, ran the hatchery. Mr. Acutt was the hatchery supervisor during the first six years and was succeeded by Mr. Colin de C. Hugo who built brood stock ponds after an additional water supply was laid. Further additions were made to the hatchery by successive hatchery supervisors.

An attempt to make a hatchery at Giant's Castle Game Reserve was also made. Two circular ponds were built in 1948. Ova was imported from Jonkershoek and Pirie hatcheries in the Cape and hatched in a small stream. The Giant's Castle hatchery did not prove to be very successful as the water supply was insufficient, and operations ceased after the 1950 hatching season.

The Royal Natal National Park trout hatchery commenced in 1950, with Messrs. Neil Shoobert and Bill Barnes being responsible for the construction. They built a hatch house containing wooden troughs, one brood stock pond, eight circular ponds and Daphnia culture tanks. Trout ova and daphnia eggs were imported from Jonkershoek hatchery in 1951. For all their efforts, the hatchery was not ready when the first ova arrived and these had to be hatched on the back verandah of the house under very Heath Robinson conditions. 70 000 ova were imported on this occasion and 60 000 fingerlings were produced. Subsequent imports of ova were received from Jonkershoek and Pirie as well as from Underberg hatchery. Local stripping commenced in 1953 when trout which were reared from the verandah hatch were old enough to strip, and 40 000 ova were produced from this stripping.

Construction of a third trout hatchery at Kamberg Nature Reserve began in 1975 and in 1976 a series of 18 raceways, each measuring 30 m. by 2,1 m., was completed. This was first used as a rearing station for fingerlings introduced from Underberg and Royal Natal National Park hatcheries. A thatched shelter to house eight troughs and a hatch house containing six troughs with incubation facilities were completed in 1978.

The first non-trout hatchery was built in 1938 near Howick in the Karkloof area on the farm Spitzkop. Mr. Sutton, who was the fisheries officer at the time, instigated this step and the hatchery was supervised by Mr. Len Tainton who owned the farm.

A series of seven small dams and 28 earth troughs was built at the top of a small

valley, and largemouth, smallmouth and spotted bass were bred in the ponds for distribution to the public. The Howick hatchery operated until 1955 by which time the Umgeni Warmwater Hatchery had come into operation.

Construction of the Umgeni hatchery, situated below the wall of Nagle dam, started in 1952. The hatchery was developed by Mr. Neil Shoobert, who ran it until 1958, and Mr. Jock Fraser then took over from him, with staff changes occurring since then.

The Umgeni hatchery was stocked with largemouth, smallmouth and spotted bass obtained from the Howick hatchery, redbreast tilapia (*Tilapia rendalli*) which were collected from the Pongolo pans by the fisheries officer, Mr. Cherrington Sutton, and Mozambique tilapia (*Sarotherodon mossambicus*) collected from a pond near Carter's Nursery in Town Bush valley by Mr. R. S. Crass. Production from Umgeni commenced in 1955 when progeny from the above fish were sold. Aischgrund carp were introduced from the Marble Hall hatchery in the Transvaal in 1960, and Rhodesian bream (*Serranochromis robustus*) were obtained from Rhodesia shortly thereafter.

A tropical fish breeding section commenced at Umgeni in 1968 for an additional source of revenue. It has since expanded from a converted storeroom to a hothouse containing 105 breeding tanks.

Umgeni hatchery has been used for experimental work in addition to fish production. As early as 1956 experiments commenced with sharp-tooth catfish *Clarias gariepinus,* large scale yellow fish *Barbus marequensis,* banded tilapia *Tilapia sparrmanii* bluegill fish *Lepomis macrochirus* and bulldog *Marcusenius macrolepidotus.* These last-mentioned species are no longer held at the hatchery, but grass carp *Ctenopharyngodon idella* were obtained in 1967, striped bass *Morone saxatilis* in 1975 and silver carp *Hypophthalmictrix molitrix* in 1977. Successful induced spawning of grass carp was achieved in January 1974 and attempts will be made to spawn the other species once they mature. Production experiments with tilapia, largemouth bass and carp have been carried out since the early years of the hatchery's existence, and further experiments with tilapia and other species are planned for the future.

Several privately owned fish hatcheries have been in operation and possibly the most lucrative have been trout farms. At present there are four active trout farmers, one of whom is operating as a large concern.

Warmwater fish farmers have concentrated mainly on tilapia production in the past, but grass carp, silver carp and selected strains of European carp have recently been introduced for polyculture purposes. One large commercial group has started polyculture production, and five or six small-scale operators are farming tilapia.

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