

**P.E.I. Trout**

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to salt water is reduced by pond formation. The pond assumes the function of the estuary in varying degrees and holds trout in fresh water, although they are free to escape over the dam where the stream is small and the supply of young trout small in relation to size of the pond formed, the movement to salt water is markedly reduced. This occurs to a less degree in the situation where the stream is larger and the supply of young trout great.

(II) Ponds formed on Island streams are highly productive of trout.

(III) Annual yields of trout to anglers from such ponds is high. (IV) When closely studied (Eliel Brook) pond formation resulted in an average increase of 40 per cent in number of trout annually taken from the stream system.

The data warrant the recommendation of pond formation as a management procedure to improve the yield of trout to anglers. This recommendation will need review in the future if pond formation should become of widely applied as to affect materially the supply of sea-run trout in the Island area.

To be most effective as a trout-producing area, it is recommended that the following actions be taken in forming a pond:

(1) that the pond be as large as circumstances permit and not less than one acre in area;

(2) that a depth of six to ten feet of water be realized over at least 50 per cent of the area;

(3) that the dam be constructed so that the pond can be drained to the original stream level to correct adverse effects of siltation, to control growth of rooted aquatic vegetation and to control numbers of fish.

(4) that provision be made in the construction of the dam for screening to prevent exit of trout. Screening would be desirable when the supply of trout is below the trout-producing capacity of the pond, but undesirable when the supply is sufficiently large to create crowding and stunting of growth.

**2. Control of upstream movements of sea-run trout.**

The majority of sea-run trout, on their return to the streams, move into sections where they are poorly accessible to the anglers. From tagging and recapture it is shown that a large proportion of these trout die naturally in the streams and are poorly cropped by the fishermen. Pools below dams are well appreciated as excellent fishing spots for sea-run trout. By remaining in such pools during the summer, the sea-run trout are more effectively cropped than if they had had the opportunity to disperse into the upper reaches of the stream. These observations point to a procedure of erecting barriers at or near the mouths of streams for holding the sea-run trout and making them more available to the anglers.

It is recommended that barriers be constructed on a few streams on a trial basis for this purpose.

The barriers may be fences constructed of panels made of laths or metal rods spaced three-quarters of an inch apart, or low dams. It is a prerequisite that there be a pool, or one created, of five feet or more in depth immediately, or a short distance below the barrier. (It has been observed that appreciable numbers of trout are held in pools below dams only when the pools are several feet in depth.)

It is recommended that the barriers be temporary, only functioning to prevent the upstream (and downstream) movement of the trout between mid-May and late September. Such barriers would principally affect the upstream June-July ("strawberry") runs of sea trout. They would leave unaffected the important up- and downstream runs of trout that occur in the fall after the angling season. In any event, barriers would be difficult to maintain in the heavy waters of spring and fall, but relatively easy to hold during the summer season. (The erection of barriers is in contravention to the Fisheries Act which states that no one shall maintain in any waters devices which unduly obstruct the passage of fish. Presumably authority would be required from the Minister of Fisheries to do so.)

**3. Control of aquatic plant growths in ponds.**

Algae ("scum") and other aquatic plants are killed by low concentrations of copper sulphate and sodium arsenite, or mixtures of the two chemicals. Effective concentration depends upon the hardness of the water and the quality of plant growth.

Thus it has to be gauged largely by assessment of local con-

**ditions. Control is temporary.**

The above chemicals are also toxic to fish, but usually at somewhat higher concentrations than necessary to destroy aquatic plants. However, the margin of safety is small, and no general prescription can be given with assurance of not killing trout. Use of these chemicals to control plants in Island ponds without killing trout can be recommended only under strict supervision after effective concentrations for local situations have been determined. (Permission to use plant poisons is required from the Department of Fisheries.)

**4. New Technique for angling.**

Trotting for trout with spinners, etc., from boats is a common method of fishing in New Brunswick and Nova Scotia lakes. It is not practised in Prince Edward Island waters, but might very well prove effective in estuaries particularly, and in the larger ponds. Demonstration of the technique is needed.

**(B) Improvement in trout production.**

It is advocated that immediate improvement in trout angling can be obtained by improving the accessibility of trout to anglers, and thus realize a fuller, more efficient cropping of the good population of trout that now exists in Island waters. It would be short-sighted to assume, however, that the future and greater demand for trout will be satisfied in this manner without hand-

**hand improvement of the production of trout.**

**1. Pond formation on streams.**

The production of trout in Island ponds has been studied by assessing the growth and survival with varying, but known densities or stocks. Results show that ponds formed on Island streams are highly productive of trout. Determined yields of trout from ponds (weight removed less weight introduced) over summer periods have been as high as 50 pounds per acre. Ponds not only increase the yield of trout to anglers but also materially increase the supply as a result of their high productive levels. The recommendation of pond formation as a management procedure to improve both accessibility and production of trout.

**2. Control of siltation.**

The soils of Prince Edward Island are easily eroded. Reduction in the siltation of streams, ponds and estuaries can only be realized and will be directly commensurate with the extent of application of agricultural procedures, such as contour plowing, which lessens erosion of farm lands.

severe local siltation which often accompanies road construction can often be materially reduced by having tap drains from road ditches terminate in low lying areas of land rather than directly in the nearest pond or stream.

**3. Other Procedures.**

Stream improvement (pool for-

mation, increasing shelter, stocking of hatchery-reared trout, predator control, control of in-trand interspecific competition between fish, fertilization of the waters, artificial feeding of fish, are procedures which have proved helpful in varying degrees in other freshwaters for improved production of trout. Opinion on their effectiveness in Island freshwaters is reserved until further data are available. Compared to most fresh waters natural production of trout on Island is high. The question to be answered is not so much whether these procedures will improve trout production as whether they will do so to a substantial and worthwhile degree, and add significantly to the existing high level of production.

**North (York) River Pond**

As a result of building a causeway to carry the Trans-Canada highway across North or York river, near Ch' town, a large pond of about 500 acres was created (1955) on what was formerly a tidal estuary. This empoundment is unique for the Island area because of its size and because it is the empoundment of an estuary.

Salt water can enter the empoundment at high tide via a sluice through the causeway. Inflow of salt water can be controlled by a valve and flap-gates installed at the pond end of the sluice.

Hydrographic conditions in the empoundment were observed in

1956 and 1957, when salt water was permitted to enter. In both years the waters were sharply stratified with respect to salinity and temperature in summer. Decomposition of organic matter in the salt water, stagnated below about nine feet in depth, resulted in a depletion of dissolved oxygen (necessary for fish life).

There was thus a large volume of the water in the pond which was uninhabitable to trout because of the lack of dissolved oxygen, but, with respect to temperature of water, quite favourable for the species. At the same time in the summer the surface waters contained sufficient oxygen for trout but they were too warm. In total, therefore, much the greater volume of water in the pond was unfavourable for trout.

**DEVELOPMENT**

The trout as a natural asset of the Island is being increasingly appreciated. However, this asset is as yet far from being fully exploited. As with any natural asset, development of the trout fishery requires investment.

The trout fishing is an attraction to the tourist. Angling success is and will be the criterion by which the tourists evaluate the Island trout fishery. Greater assurance of angling success during July and August is needed to enhance the trout angling as an attraction to the tourists. To do this the following scheme is proposed.

The scheme involves ponds which the Province may control or secure control of, or better, create with those characteristics known to give the most favourable trout production. With the present angling season (April 15 to September 15) a good proportion of the annual crop of trout from ponds is removed by residents anglers in the spring before the arrival of the tourists. It is

anticipated events will occur with exclusion of salt water.

With exclusion of salt water, sea-run trout will not be able to re-enter the pond. The pond is fed by a number of spring-fed streams, with a lombined drainage area of about 50 square miles. The streams are well populated with young trout. Both supply of water and of young trout for the pond would appear to be assured at a good level.

**CLOSURE OF PONDS**

Closure of ponds until July or August would necessitate guardianship. It is suggested that the owner of the land on which the ponds are situated be paid an annual retainer to serve as guardian. It is further suggested that such landowners be encouraged to provide boats for hire, thereby assuring facilities for angling, also giving revenue to the owner. Permission to close ponds to a later date than provided in the fishing regulations could be obtained from the Minister of Fisheries.

It is considered that the value of this procedure as a method of attracting tourists should first be demonstrated by the Province, or under other public auspices. With demonstration, private enterprise

proposed that a number of ponds controlled by the Province be closed to angling until July and August, and then provided to both resident and tourist fishermen.

This procedure would assure better angling for the tourists, and since attention would be drawn to specific ponds, effective utilization of the resource would also be realized.

**Private Investment**

Private investment could be realized from the sale of angling privileges (rod fees, charge for fish caught). Trout farming for this purpose, or for sale of trout as a luxury food item, has unexplored possibilities on Prince Edward Island, where high natural productive levels for trout demonstrate the suitability of the waters.

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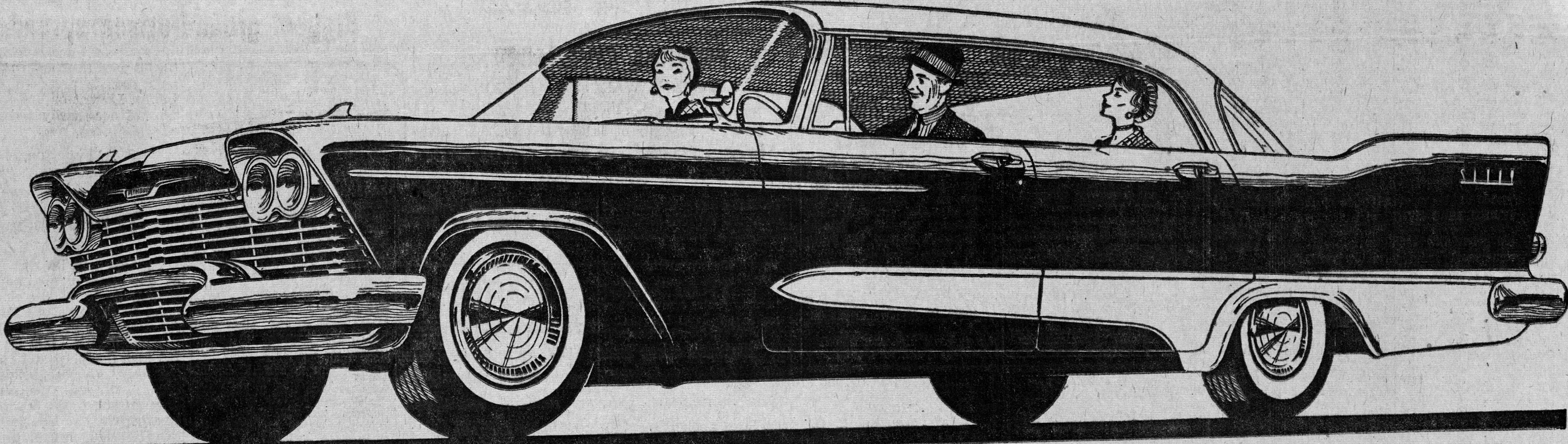
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