

The Jordan-Scotty Salmonid Egg Incubator Users Guide



For use by everyone who is interested in enhancing salmon and other fish runs in any stream, river or lake. Perfect for streamkeeper groups, research applications and education projects.

Purpose

The critical need to enhance our salmon stocks is well documented. Natural spawning has declined dramatically over the past 50 years for many reasons. Many of our spawning areas no longer exist. Many spawning areas that still exist are only partially effective and many of our original salmon stocks are now extinct. The need for increased salmon enhancement programs by volunteers has never been greater. The availability of the Jordan-Scotty Incubator, as a simple yet effective incubation unit, can be of great help for our precious salmon stocks and their eventual recovery.

The development of the Jordan-Scotty Incubator is the direct result of the desire by Scott Plastics Ltd to make a contribution to the enhancement of salmon and trout stocks in the streams and creeks around the world. Over the years, due to Man's intervention, these habitats have lost their natural spawning and rearing capabilities. At Scotty, we hope that our efforts will assist bringing the fish back. With your help, we can see to it that future generations will be able to watch fish return to streams and rivers in historic quantities.

HSBC Donation

HSBC generously donated \$20,000 to support the free distribution of the Jordan/Scotty Salmonid Incubators for education and community salmon enhancement, stewardship or stream keeper groups. Scott Plastics would

like to thank HSBC for their support and commitment for a successful return to healthy rivers and streams. HSBC Donation Funds are still available and any education and community Salmon enhancement groups in Canada may apply. (Pacific Salmon Foundation continues to manage the funds). However, please contact Scott Plastics for information.

History and Design

The original Incubator prototype was designed and tested by Mr. Fred Jordan, a Salmonid Technician for many years. He conceived this idea for stream enhancement during the 1980's. The success of his early experiments with this unit led to research, development and further design of the incubator by Scott Plastics Ltd of Sidney, BC. This modern unit is extremely efficient and very compact. It is simple to use, durable, cost effective and practical, making it an excellent addition to Salmonid enhancement projects.

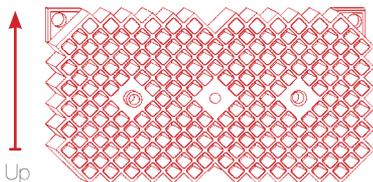
The Jordan/Scotty Incubator is a scientifically designed and tested plastic incubation unit and was developed to provide an efficient aid in the stream incubating of salmon or trout eggs. The unique design either eliminates or minimizes most of the problems experienced by natural spawning. Fungus infection is virtually eliminated and eggs are protected from predators and silt suffocation. Testing and usage





indicates that survival rates from egg to fry is often better than 65 - 95% as compared to natural spawning survival rates of between 5% - 20%.

In nature, high egg loss rates can be caused by poor fertilization when deposited, eggs not being successfully buried, fungus from dead eggs spreading to healthy eggs, attrition by predators, and silt suffocation. The Jordan-Scotty incubator addresses these issues and others. Egg quality can



be checked during the loading process and all eggs are fertilized before loading. Eggs are quarantined from each other

during development, limiting the spread of disease and fungal infection. Eggs are safe from predators and alevin are safely contained until their yolk sac has been absorbed, increasing survival rates.

How it Works

A pair of loaded plates are bolted together to create a “unit” designed to hold 200 single eggs or more, depending on species and size of egg. The plates are held together by nylon tie bolts and stainless steel nuts and can be grouped in up to 5 unit sets. Escape holes allow the hatched fry to swim free once they have developed in their protected environment. The assembled egg units are anchored in streams by securing them to re-bar stakes or some other permanent holders. Incubator plates are available with three sizes of escape hole, use to be determined using below chart.

Species	Egg Size (Average)	Recommended Plate Color
Chinook/King salmon	8.0–12.0 mm	Green
Chum/Dog salmon	8.0 mm	Green/Red
Brown Trout	4.0-5.0 mm	Red
Coho	7.0 mm	Red
Eastern Trout	4.5 mm	Red
Pink salmon	6.8 mm	Red
Rainbow Trout	5.2 mm	Red
Sockeye	6.0 mm	Red
Steelhead	5.2 mm	Red
Walleye	2.5 mm	Yellow

HINT: A pair of Coho salmon will provide between 2000 and 2500 eggs, which can be accommodated in two of these 5 unit packs.

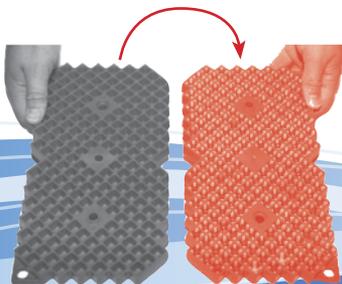


Loading the Incubator

Incubators are intended for use with “Green” or “Eyes” eggs.

A loading tray will help to load the incubator so that each cell is filled and with the least damage to eggs in the process.

1. Place fertilized eggs into a water-filled basin.
2. Lower loading tray into basin of eggs.
3. Allow eggs to cover loading tray and lift gently to fill each cell with one egg.
4. Gently brush off surplus eggs. Remove or replace unhealthy or damaged eggs.
5. Place an empty incubator plate over loader plate and invert the two plates to transfer the eggs to the incubator plate.
6. Remove the empty loading tray and check that all cells are filled.

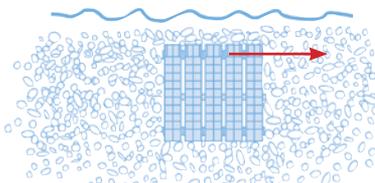


7. Top with second incubator plate and secure together with nylon tie bolt and stainless nuts.
8. Incubator units can be placed as singles or in groups of up to 5. Simply cut tie bolts where appropriate and secure with extra nuts.

Placing the Incubator

1. Units must be placed in stream gravel so that they are continually covered by a flow of water passing through gravel and cells.
2. Submerge units so that hole tabs of the units are on top, ensuring that the escape holes are at the bottom of the cells so that sand particles wash right through the compartment and silt does not build up to block cells.

Flow of Water



Side view of 10 Incubator plates (holding 1000 eggs) placed upright in gravel.



3. Escape holes should also face the water flow to ensure the maximum amount of oxygen rich water to flow through the unit.
4. Incubators should be securely anchored to ensure that they remain in position. Avoid areas subject to flash flooding. A good location is downstream from a large boulder. You can also attach the unit to a section of embedded re-bar to help hold in place.
5. Completely cover the units with 3 inches of gravel to help anchor and to protect the units and fry once they escape. Discretely mark or record location to assist in recovery of units.
6. Incubator must be at a depth where it will be covered with water at all times. Be aware of the possible/likely depth changes in your location.

Care and Maintenance in Location

If possible, incubators should be located in places where they are protected from vandalism or curiosity. During the incubation period, the incubators should be checked regularly to ensure that:

1. They remain in position.
2. They are free of debris.
3. They are covered with a continuous flow of water.

Note: Do Not Disturb or open the units until all the fry have escaped. Check with your egg provider for approximate length of incubation for the egg species used.



An underwater camera shows the incubator placed among large rocks.

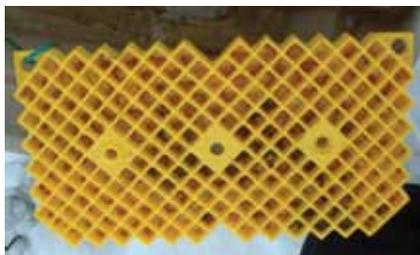


Checking your Results/ Removing Incubator

When removing the incubator, care should be taken to disturb the gravel as little as possible, as this is where the fry are hiding.

Once removed, the incubator can be opened to reveal the success of the hatch rate. Wash incubators thoroughly and dry before storage. Store in a dark, dry place. With proper care, the Jordan/Scotty Incubator units can be used season after season.

If possible, please submit results of your project to your local Fisheries Dept or hatchery. As well, Scott Plastics Ltd would appreciate any information or report you can provide in order to log success rates and use of these units.



Incubator Tray above showing the mortality and survival rate within two weeks.

Classroom Applications

Clear incubator plates are available for classroom or similar applications. These allow for viewing of eggs throughout incubation period and are a helpful tool in many educational projects.

Chris Robinson, the O.F.A.H. Atlantic Salmon Restoration Program Coordinator notes "each hatchery gets 100 eggs in January, and the resulting fry are released by the students in May into one of our three target tributaries for Atlantic salmon restoration in Lake Ontario. The students enjoy watching the eggs hatch into alevin in their clear-plastic "condos". Over 800 students this year will directly be involved, but in many schools multiple classes participate, so the number is much higher."

Chris Robinson, M.Sc.

O.F.A.H. Atlantic Salmon Restoration
Program Coordinator

Ontario Federation of Anglers
and Hunters



Where and When to Obtain Eggs

Contact your local Dept of Fisheries & Oceans or similar agency. In Canada, contact the DFO Community Advisor. The disposition of salmonid eggs is carefully supervised and controlled by DFO to ensure that all enhancement activities meet area requirements and conform to department standards.

Protocols regarding the transfer of eggs must be approved by the federal-provincial Introductions and Transfers Committee. In British Columbia, a list of the community advisors in your area can be obtained by contacting the Habitat Enhancement Branch:

Department of Fisheries & Oceans

Community Involvement
Habitat Enhancement Branch
400-555 West Hastings Street
Vancouver BC
Canada, V6B 5G3

P: 604-666-6614

F: 604-666-0292

How to Obtain Jordan/Scotty Incubators

The development of the Jordan/Scotty Incubator is the direct result of the desire of Scott Plastics Ltd to make a contribution to the enhancement of salmon stocks in the large number of streams and creeks of BC, and elsewhere in the world. To date, the entire cost of research and development of the Jordan/Scotty Incubator has been borne by Scott Plastics Ltd. These units are available at a nominal price to cover minimum raw materials and labour costs. Incubators can be purchased from:

Scott Plastics Ltd

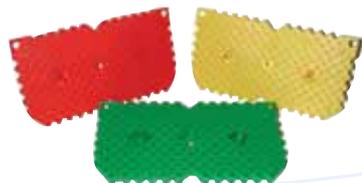
2065 Henry Ave West
Sidney, BC, Canada
V8L 5Z6

P: 250-656-8102

F: 250-656-8126

E: incubator@scotty.com

Please state the name and intention of your organization and include full contact information.





"We have been using Scotty Incubators since 2003 and we absolutely love them. We use the incubators for lake trout studies as well as for increased lake trout survival and egg relocation."

Nadine Thebeau, Ontario Ministry of Natural Resources,
Red Lake District

"The new style of easy loader trays was amazing! Last time it took us 3 hours to do 6000 eggs. We did 10,000 in 45 minutes this year! A great time savings."

Wayne Sheridan, Canadian Angling,
Upper Saugeen Habitat Restoration Association

"...we are excited by the hatch rates achieved and feel confident that the use of Scotty incubators will continue to play a major part in the replacement of the salmon runs in our major South Island rivers."

Pam Ellis, New Zealand Salmon Anglers Association Inc,
Christchurch, New Zealand.



www.scotty.com

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