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Fish Committee

Salmonid Terminology

PART I. A Revised Terminology List for Atlantic Salmon

(Salmo salar, L.)

by

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SUMMARY

A proposed list of definitions and terms designating the different life stages of the Atlantic salmon is presented in English with equivalents for the basic terms also presented in the languages of the Atlantic salmon-producing countries in North America and Europe. The basic terminology list includes definitions for alevin, fry, parr, smolt, post-smolt, salmon, 1- to 4-sea-winter salmon, previous spawner and kelt. A detailed set of definitions and terms for sub-stages of parr and previous spawners is also presented in English only.

INTRODUCTION

At the request of the Anadromous and Catadromous Fish Committee of the International Council for the Exploration of the Sea, Allan (1967) presented a revised terminology list for Atlantic salmon in which the "Lists of Common Expressions for Salmon (Salmo salar, L.)" originally prepared by Jarvi and Menzies (1936) was brought up-to-date.

Contributions to the 1967 revision were received from the following countries: Canada, Denmark, France, W. Germany, Holland, Iceland, Republic of Ireland, Poland, Spain, Sweden, United Kingdom, U.S.A. and U.S.S.R. Where no contributions were received it was assumed that no corrections or additions were required by those countries and, therefore, the terms of the original list by Jarvi and Menzies (1936) were reproduced.

After the 1967 terminology list was produced, further changes occurred in scientific usage and, in 1974, a paper by Ritter and Harger (1974) was presented to the Anadromous and Catadromous Fish Committee, in which refinements to the 1967 list were suggested. As a result, the Committee decided that the present authors should collaborate and prepare a definitive paper for publication. The present paper is the result of this collaboration.

The purpose of the paper is two-fold: first, to enable salmon fishery scientists to interpret correctly the terms used in scientific literature emanating from countries other than their own and, secondly, to propose a set of terminology for use by scientific authors and fishery managers.

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## REVIEW OF TERMINOLOGY

The preparation of a terminology list for the life stages of a fish is, to some extent, a subjective exercise if only because different countries use different criteria for their own classifications and because such criteria have different connotations as a result of variations in rates of growth and ages at migration. Therefore, in revising the original list of Jarvi and Menzies (1936), we have selected those terms for which the basis is objective rather than subjective while indeterminate descriptive terms such as "under-yearling" and "fingerling" have been deleted. If terms other than those in this revised terminology list are used in scientific papers, authors are urged to define them carefully.

In the following we propose a set of definitions and terms to designate the different life stages of the Atlantic salmon.

### (1) Alevin

The first stage through which the salmon passes after hatching is termed the alevin stage and is usually found within the gravel of the redd. Alevin encompasses the period during which the young fish is dependent upon the yolk sac as the primary source of nutrition.

### (2) Fry

The term fry has frequently been used to designate the stage lasting from complete absorption of the yolk sac to the end of the first year of post-hatching life. This usage is not appropriate since in those parts of the species range where migration to the sea may take place at the end of the first year of post-hatching life migrants would not have passed through the parr stage between the fry stage and the smolt stage.

We, therefore, suggest that the term fry be used to define that stage beginning with independence from the yolk sac as the primary source of nutrition and terminating with dispersal from the redd. Fry are found over the redd after emergence as alevins from the gravel and are capable of feeding, although vestigial traces of the yolk sac may remain. The duration of this stage is short and normally measured in days.

### (3) Parr

The next-following is the parr stage which starts with dispersal from the redd and continues up to the time the young fish become fully silvered and start their seaward migration as smolts (see below).

The parr stage is often sub-divided according to both age and size. Age-designation is clearly the most precise usage and the terms 0+, 1+, 2+ parr, etc., are commonly used to describe parr of less than 1 year, 1 year or over but less than 2 years, 2 years or over but less than 3 years, etc, respectively.

Size-designation is less precise but may be of more practical value when dealing with large numbers of fish during field surveys for population estimates. Samples collected for such purposes are often divided into 3 categories: large parr, small parr and 0+ parr. "Large" parr are considered to be those which are likely to become smolts the following spring. This group is usually comprised of fish of different age-classes, all of which exceed a minimum operationally defined size limit which varies from river to river. "Small" parr are those fish which are not likely to become smolts the following spring and are not of the current year's hatch. The 0+ parr are those parr from the current year's hatch.

In some parts of the species range, parr may become partially silvered and undertake downstream migrations earlier than the normal time that the true smolt migration takes place. Such fish should be designated as partially-silvered parr and not smolts.

Also, parr may migrate into and out of various water impoundments at different times; these fish should not be designated smolts.

Some male parr may ripen or mature during their freshwater residency. These mature parr are known to produce viable sperm and are capable of fertilizing eggs. Such fish are designated as precocious parr.

#### (4) Smolt

The smolt stage is defined as a fully-silvered juvenile salmon during its first seaward migration, normally in the spring, and is capable of surviving transition from fresh water to fully saline water.

#### (5) Post-Smolt

The post-smolt stage refers to the juvenile salmon from the time that it departs from the river as a smolt until annulus formation at the end of the first winter in the sea.

A fish which returns to the river in the same calendar year as it migrated as a smolt, an occurrence which is recorded, would similarly be designated a post-smolt.

#### (6) Salmon

The terminologies in use for maturing fish returning from the sea to spawn are varied and depend, in some classification systems, on the season of return and in others on the size of the fish, the numbers of winters spent at sea, or on the age and previous history of the fish as indicated by growth patterns on its scales. Clearly, the latter designation is the most specific, but the more usual designation in common use is that which describes the number of sea-winters. This is more specific than the number of sea-years.

In consideration of the above we suggest that the term salmon should be used to designate all fish after the post-smolt stage. Age should be defined by the number of winters elapsing since the fish entered the sea as a smolt.

The colloquial term "grilse", representing a salmon which has first matured, or is about to mature, after one sea-winter is strongly entrenched in common use and in the literature. However, this term is a source of inaccuracy as it is frequently applied to salmon within an arbitrary length or weight range which may include fish of different sea-ages. Therefore, we recommend that if the term "grilse" is used instead of the more precise sea-winter terminology, it be initially defined.

The term "grilse" has a maturation connotation and it should not be used for 1-sea-winter salmon caught during the marine feeding phase. Such fish may not be maturing to spawn but be destined to spend a second winter (or more) at sea before doing so.

Salmon of 2 or more sea-winters, as a group, should be referred to as multi-sea-winter salmon.

The extent to which the salmon sea-winter age-classes are segregated on entering the rivers as distinct seasonal "runs" in spring, summer and autumn or fall varies widely. All, or only some, of the seasonal runs may be present and one or more runs may predominate. In U.K. "grilse rivers", for instance, the 1-sea-winter fish predominate and enter the river mainly as a summer run but may continue to arrive as late as the spawning months.

When the year-class composition of a seasonal run is sufficiently well-established such seasonal terminology may have some value, in view of the genetic and feeding migration implications for stock management. Where such seasonal terms are used, however, they should always be carefully defined initially because salmon of different sea-winter age-classes can overlap considerably in their run timing.

The descriptions "small" or "large" for salmon are subjective and thus imprecise and should be avoided. If such terms have to be used to indicate loose groupings of individuals - for instance in reporting a sport or commercial catch for which identification of age-classes may not be possible - the ranges of lengths or weights used within the groupings should be specified. Classification of salmon by weight or length is also imprecise in that a considerable overlap for the various sea-winter age-classes can occur.

Salmon of any age-class which are maturing for the first time should be designated as "maiden" or "virgin" salmon.

Salmon of any age-class which are maturing for a second (or subsequent) time are referred to as "previous spawners". We have chosen the word "previous" rather than "repeat", even though the latter is widespread in current usage. The term previous spawner applies to fish at any time after initial spawning whereas the term repeat spawner is only appropriate when describing fish that have spawned two or more times.

The terminology of fish with a spawning history should take into consideration: (i) the age of the fish at initial spawning, (ii) the temporal pattern of the subsequent spawning migrations, and (iii) the number of previous spawnings.

It is suggested, therefore, that previous spawning fish be categorized according to their designation of first spawning. Thus, a fish which spawned initially as a 1-sea-winter salmon (grilse) remains a 1-sea-winter salmon (grilse) throughout its subsequent history and is, accordingly, designated as a previous spawning 1-sea-winter salmon (previous spawning grilse). Older previous spawning salmon can be designated similarly.

The temporal pattern of successive spawnings is frequently consistent for an individual fish in that it spawns every year or every other year. Fish attaining sexual maturity in these two patterns are designated as consecutive or alternate spawners, respectively. Alternative descriptions in common use are short-absence and long-absence for fish which have spawned in consecutive or alternate years, respectively.

The number of spawning occasions provides a further division (e.g., consecutive spawning 2-sea-winter salmon, second spawning).

This proposed system categorizes previous spawning salmon according to their sea-age at first spawning. This system defines time of maturation in marine age, designated by the number of sea-winters elapsing between entry into the sea as a smolt and first spawning. Until first spawning, use of sea-winters to designate sea-age is appropriate but designation of total sea-age of salmon that have spawned previously in sea-winters would be a misnomer because these salmon may have spent the entire

winter(s) in the river immediately following spawning. We propose, therefore, that total sea-age of previous spawning salmon be designated in "winters" and in "sea-winters" while total sea-age of immature and maiden salmon be designated in "sea-winters" only (e.g., 5-winter consecutive spawning 2-sea winter salmon, two spawnings and 3-sea-winter salmon, respectively). The former designates a salmon living five winters since entering the sea as a smolt. This fish spawned initially as a 2-sea-winter salmon and again two years later. The fish was scale sampled during the year following its second spawning and was in its sixth year since entering the sea as a smolt. The latter term in the example designates an immature or maiden salmon either feeding in the sea or on its first spawning migration. This salmon lived three winters since entering the sea as a smolt.

#### (7) Kelt

Among fishery workers disagreement exists over definition of the term kelt. All agree that this term refers to a spent or spawned-out salmon but disagree about the termination of the stage. According to some individuals, viewing the salmon as a marketable food item, a spawned-out salmon ceases to be a kelt when it has recovered the condition and weight lost during and following its spawning migration. Other individuals state that a spent salmon ceases to be a kelt when it re-enters salt water. We tend to agree with the latter definition as it is more specific than the former and is more meaningful in light of the physiological changes that take place with re-entry into saltwater (i.e., re-acclimation, beginning of feeding and replacement of weight lost and silvering).

Because the two definitions for the term kelt are likely to cause misinterpretation, we urge authors to define carefully when initially using the term kelt.

The terminology used in fish culture may be different from the above and is likely to be more detailed and chronological in relation to the early development stages. However, for the sake of uniformity it is recommended that, so far as is possible, the terminology used by fish culturists follow that set out in this paper.

#### ACKNOWLEDGMENTS

We are greatly indebted to colleagues in other countries who have contributed terminology lists to this paper, and also to those in our own countries with whom we have had the benefit of discussion on the proposed terminology.

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Table 1. Revised Terminology List for Atlantic Salmon (*Salmo salar*, L.), September, 1975

	Term	Definition
1.	ALEVIN	Stage from hatching to end of dependence on yolk sac as primary source of nutrition.
2.	FRY	Stage from independence of yolk sac as primary source of nutrition to dispersal from the redd.
3.	PARR	<p>Stage from dispersal from redd to migration as a smolt.</p> <p>0+ parr = parr less than 1 year old. (= parr of the year's hatch).</p> <p>1+ parr = parr 1 year or over but less than 2 years.</p> <p>2+ parr = parr 2 years or over but less than 3 years.</p> <p>3+ parr = parr 3 years or over but less than 4 years.</p> <p>Precocious parr = male parr fully ripened or matured in freshwater.</p> <p>Partially silvered parr = parr that are partially silvered and migrating downstream prior to the normal smolt run.</p>
4.	SMOLT	Fully-silvered juvenile salmon migrating to the sea.
5.	POST-SMOLT	Stage from departure from river until annulus formation at the end of the first winter in the sea.
6.	SALMON	All fish after annulus formation at the end of the first winter in the sea.
(a)	1-sea-winter salmon	Salmon which has spent one winter at sea (= "grilse" when maturing).
(b)	2-sea-winter salmon	Salmon which has spent two winters at sea.
(c)	3-sea-winter salmon	Salmon which has spent three winters at sea.
(d)	4-sea-winter salmon	Salmon which has spent four winters at sea.
(e)	Previous spawner	Salmon which has spawned on previous occasion(s).
7.	KELT	Spent or spawned-out salmon up until the time it enters saltwater.

CANADA			DENMARK
ENGLISH	FRENCH		
1. Alevin	Alevin vésiculé	Blommeyngel Spoedyngel	
2. Fry	Alevin	Yngel	
3. Parr Precocious parr	Tacon Tacon génésique (=Precocious parr)	Unglaks	
4. Smolt	Saumonneau	Udvandrende unglaks, Smolt	
5. Post-smolt	Postsaumonneau	Små <sup>o</sup> laks (1)	
6. Salmon	Saumon	Laks	
(a) 1-sea-year salmon 1-sea-winter salmon (Grilse)	Saumon d'un an en mer	Små <sup>o</sup> sommerlaks (2)	
(b) 2-sea-year salmon 2-sea-winter salmon	Saumon de deux ans en mer	Mellemstor } (3) vinterlaks } Mellemlaks Mellemstor } sommerlaks }	
(c) 3-sea-year salmon 3-sea-winter salmon	Saumon de trois ans en mer	Stor } (4) vinterlaks } Storlaks Stor } sommerlaks }	
(d) 4-sea-year salmon 4-sea-winter salmon	Saumon de quatre ans en mer	Storlaks	
(e) Previous spawner	Saumon à pontes antérieures		
7. Kelt (= Black salmon, Slink)	Charognard	Nedfaldslaks	

Notes: (1) and (2) = Små<sup>o</sup>laks  
(1) (2) and (3) = Små<sup>o</sup>laks of Baltic Sea commercial catches  
(4) = Storlaks of Baltic sea commercial catches

	FINLAND	FRANCE	W. GERMANY	HOLLAND
1.	Kuoriutunut poikanen	Alevin vésiculé	Dottersackbrut	Larve zalmbroed
2.	Vastasyntynyt poikanen	Alevin	(fressfähige) Brut	
3.	Lohenpoikanen Tonko (Oulu river) Karirauto (Kemi river)	Tacon (= Tocan)	Junglachs  (frühreifer junglachs = precocious parr)	Jonge zalm
	Muuttopoikanen Kiiltopoikanen	Tacon (=Tocan) de descente	Abwandernder junglachs	Jonge aftrekkende zalm
5.	Pikkulchi		Speitzgen	
6.	Lohi	Saumon	Lachs	Zalm
(a)	Kossi	Madeleineau Castillon, Gerbillot	Jakobs-lachs	Jacobszalm
(b)	Pienilohi	Saumon de printemps	Laichlachs	Kleine zomerzalm
(c)	Isolohi ♂Kojamo Ukkolohi	Saumon d'été		Grote zomerzalm
(d)	Suurlohi ♂Suurkojamo suur-ukkolohi	Saumon d'hiver		Grote winterzalm
(e)	Ennen kutenut lohi	Saumon mature	Wiederlaicher	
7.	Kutulohi Laskulchi	Charognard	Jager	Hengst



	ICELAND	IRELAND	NORWAY	POLAND
1.	Kviðpokageiði, Pokaseiði	Alevin	Larve	Wylęg, Wylęg z woreczkiem żółtkowym
2.	Seiði	Fry	Yngel	Narybek
3.	(Sumargamalt seiði = 0+ parr)	Parr  Precocious parr	Tit	Młody Łosoś Palczak
4.	Gönguseiði	Smolt	Blinke	Smolt
5.	Smálax	Post-smolt		Mielnica
6.	Lax	Salmon, Bradán	Laks	Łosoś
(a)	Smálax	Grilse (=peal, graul)	Smálaks, Tert, Svel	Grilse Roozniak morski
(b)	Lax Millilax	Small spring salmon Small summer salmon	Mellemlaks	Mały Łosoś wiosenny Mały Łosoś letni
(c)	Stórlax	Large spring salmon Large summer salmon	Storlaks	Wielki (duży) Łosoś wiosenny Wielki (duży) Łosoś letni
(d)		Very large spring salmon Very large summer salmon		Bardzo wielki (duży) Łosoś wiosenny Bardzo wielki (duży) Łosoś letni
(e)		Previously spawned salmon		Łosoś dojrzały (ponownie) Łosoś po uprzednim tarle
7.	Niðurgöngulax Hoplax	Kelt	Winterstöing	Tarlak, Klemp, Łosoś wytarty (= kelt Łososia)

	PORTUGAL	SPAIN	SWEDEN
1.	Alevin	Alevin	(Gulsäcks) Yngel
2.		Jaramugo	(Frittsimmande or ätande) Yngel
3.	Caloiro	Pinto y Ñal	Stirr
4.	Novatos	Esguin y Pinto	Smolt Symbol: A
5.			Symbol: A.+ (5)
6.	Salmao	Salmon	Lax, Östersjölax (6)
(a)		Ñal	Smälax, Grilse Symbols: A.1, A.1+
(b)	Salmao primavera (= spring salmon) Salmao de verao (= summer salmon)	Salmon temprano o vernal pequeno Salmon estival o serondo pequeno	Symbols: A.2 A.2+
(c)		Salmon temprano o vernal grande Salmon estival o serondo grande	Symbols: A.3 A.3+
(d)		Salmon temprano o vernal muy grande	Symbols: A.4 A.4+
(e)			Symbols: A.BG+ A.B+G+ A.BGG A.BG1G
7.	Trancas	Zancado	Vraklax, Vinterstandare

	UNITED KINGDOM	U.S.A.	U.S.S.R.
1.	Alevin	Alevin	Pred-lichinka
2.	Fry	Fry	Lichinka
3.	Parr Precocious parr	Parr (from 1st July in year of hatching)	Pestrjatka, Talma (Kazlikovijsamets precocious parr)
4.	Smolt	Smolt	Pokatnik
5.	Post-smolt	Post-smolt	
6.	Salmon	Salmon	Losas, Senga
(a)	1-sea winter salmon (Grilse)	1-sea-winter salmon (Grilse)	Tinda (7)
(b)	2-sea-winter salmon	2-sea-winters salmon	Sinjushka (7)
(c)	3-sea-winter salmon	3-sea-winters salmon	Listopadka (8)
(d)	4-sea-winter salmon	4-sea-winters salmon	Zakroika (9)
			Mezhen (9)
			Zaledka (10)
			Ossenniaja (11)
(e)	Repeat spawner 2nd(3rd) time spawner Previous spawner	Repeat Spawner	Valchak
7.	Kelt	Kelt Post-kelt = kelt which has reached the open sea	

Notes: Sweden (5) Up to 31st December only.

(6) Refers to Baltic salmon.

U.S.S.R. (7) Refers to small salmon spawning in the same year as entering the river.

(8) Refers to small salmon entering river in the autumn but not spawning until the following autumn.

(9) Refers to fish other than 1-sea-winter fish which enter river in summer and autumn and spawn the same year.

(10) Refers to large salmon which approach the river mouth in autumn but enter river following spring.

(11) Refers to large salmon which enter the river in autumn and spawn in following spring.

## PART II. A Terminology List for Migratory Trout

(Salmo trutta, L.)

by

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### SUMMARY

A proposed list of definitions and terms designating the various life-stages of the migratory form of the trout (Salmo trutta, L.) is presented with equivalents for the basic terms, where available, in Europe and North America. The basic terminology list includes definitions for alevin, fry, parr, smolt, post-smolt, adult fish, previous spawner and kelt.

### INTRODUCTION

In response to the request of the Anadromous and Catadromous Fish Committee a terminology list for the migratory form of the trout, Salmo trutta, L. was submitted by the Author (1967). The present paper is based on that document but incorporates various improvements largely derived from a paper on Atlantic salmon terminology by Ritter and Harger (1974).

Contributions to the terminology list have been received from the following countries: Belgium, Canada, Denmark, Finland, France, W.Germany, Holland, Republic of Ireland, Norway, Poland, Sweden, United Kingdom and United States of America.

The indigenous European, or brown, trout, Salmo trutta, occurs in both migratory and non-migratory forms, and also an intermediate form which inhabits estuaries for feeding purposes. The present paper refers only to the fully anadromous form of the species commonly called migratory trout or sea-trout.

The purposes of this paper, as in the case of Part I on Atlantic salmon, are to enable fishery scientists to interpret correctly the terms used in foreign scientific literature and to propose a terminology list for use by scientific authors and fishery managers.

Where alternative terminologies are used it is urged that authors define their terms carefully, in order to avoid mis-interpretation.

### REVIEW OF TERMINOLOGY

#### (1) Alevin, fry, parr and smolt.

The biology of the early life-stages of the migratory trout has a great deal in common with that of the Atlantic salmon and it is feasible, therefore, to use the same criteria in defining the alevin, fry, parr and smolt stages as are used in Part I of this paper relating to that species. These criteria are set out in the terminology list, below. In so far as there is no record of the existence of precocious male migratory trout parr (such fish, if they exist, would probably be indistinguishable from mature non-migratory members of the species), nor of partially-silvered migratory trout parr, these variants are not included in the discussion.

## (2) Post-smolt

After the smolt stage the biology of the two species differs both as to the period which may be spent in the sea before return to freshwater and as to the age at which maturation takes place.

The duration of the trout post-smolt stage is very variable. In some cases the fish spend the first winter in the sea after migrating as smolts (as is the case with Atlantic salmon), and return to spawn in the year following their smolt migration. In other cases (and these may constitute the majority) they return to freshwater in the same year as they migrate as smolts and may, or may not, then spawn. Some of these early-returning fish, for which special terms are used in some countries, return to the sea soon after their arrival in freshwater and others over-winter in freshwater and return to the sea in the following year.

This variation in maturation and return-pattern creates considerable terminological difficulties: to cover all the possible variations would necessitate a complex list of terms the utility of which would seem to be doubtful. It is suggested, therefore, that, whilst acknowledging that a "post-smolt" stage occurs after departure from the river as a smolt, it is not feasible to define a single specific end point to this life-stage as is possible with Atlantic salmon. Because migratory trout in the post-smolt feeding stage form the basis of some localised coastal, commercial fisheries, however, the term must be retained in the nomenclature list and it is defined, therefore, as the period embraced by departure from the river as a smolt until:

- (a) return to freshwater in the year of smolt migration, or
- (b) the end of the first sea-winter, if there is no return in the smolt-migration year, as indicated by the onset of wide annulus formation on the scales.

As in the case of the Atlantic salmon, the onset of wide-annulus formation on the scales, indicating the resumption of rapid growth, is a convenient biological marker for the end of the first sea-winter.

## (3) Migratory trout (sea-trout)

It is suggested that the terms migratory trout (or sea trout) be used to designate all fish after the post-smolt stage as defined above, and that their age-classes should be defined as the number of sea-winters elapsing since the fish migrated as a smolt.

An early-returning post-smolt, on re-entering freshwater in its smolt migration year would thus be designated as an 0-sea-winter migratory trout, a post-smolt which had over-wintered at sea after smolt migration would become a 1-sea-winter migratory trout.

## (4) Spawning terms.

Migratory trout of any age class which are maturing to spawn for a second (or subsequent) time are referred to as previous spawners.

The terminology for fish with a spawning history should relate to the age at initial spawning and the number of previous spawnings. Once a migratory trout has spawned it is usual for it to spawn in each consecutive year thereafter.

A migratory trout returning to spawn again after having originally spawned as an 0-sea-winter fish would, therefore, be designated as an 0-sea-winter previous spawner, and the number of spawning occasions added; for example: 0-sea-winter previous spawner, 3rd spawning.

However, if that fish had not spawned on its first return to freshwater as an 0-sea-winter fish but had returned to the sea, to re-enter freshwater to spawn the following year and then in subsequent years it would be designated as a 1-sea-winter previous spawner. Thus the designation indicates the original spawning-pattern, not the original return-pattern, as it is suggested that this definition is the more important biologically. The number of the subsequent spawning is then added, e.g. 1-sea-winter previous spawner, 3rd spawning.

(5) Kelt

The term kelt refers to a migratory trout of both sexes and of any age-class which has recently spawned and has not yet recovered condition.

In view of the fact that migratory trout kelts may spend a prolonged period in the river after spawning and usually resume active feeding in freshwater, thereby regaining their condition, it is proposed that the termination of this life stage should be taken as either:

- (a) when the fish re-enters salt water or
- (b) when scale re-growth has become initiated.

This term will apply to those 0-sea-winter fish which spawn as well as to the older sea-winter classes.

(6) Artificial propagation

The terminology used in defining the life stages of cultivated migratory trout should, where possible, follow those used in designating the wild fish in order to avoid misapprehension in interpreting reported results from re-stocking, and other experiments. More elaborate sub-division of the early life stages may, however, be necessary for hatchery purposes.

#### ACKNOWLEDGMENTS

The author wishes to acknowledge the assistance of colleagues on the Anadromous and Catadromous Fish Committee in making their lists of national terminology available. He also wishes to acknowledge, particularly, the assistance derived from discussions with Mr J A Ritter in relation to the latter's joint paper with Mr J.R.E. Harger on salmon terminology referred to in Part I of this paper; the similarity of much of the salmon and migratory trout life cycles has enabled extrapolation from the one species to the other, thereby ensuring a large measure of consistency in their respective terminologies.

Finally, the author wishes to thank his colleagues in the Salmon & Freshwater Fisheries Laboratory for discussions, and in particular Mr A Swain.

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Terminology List for Migratory Trout (Sea-trout) (Salmo trutta, L.)

Term	Definition
1. ALEVIN	Stage from hatching to end of dependence on yolk sac as primary source of nutrition.
2. FRY	Stage from independence of yolk sac as primary source of nutrition to dispersal from the redd.
3. PARR	<p>Stage from dispersal from redd to migration as a smolt</p> <p>0+ parr = parr less than 1 year old (= parr of the year's hatch).</p> <p>1+ parr = parr 1 year or over but less than 2 years.</p> <p>2+ parr = parr 2 years or over but less than 3 years.</p> <p>3+ parr = parr 3 years or over but less than 4 years.</p>
4. SMOLT	Fully silvered juvenile migratory trout
5. POST-SMOLT	<p>Stage from departure from river as a smolt until</p> <p>(a) entry into freshwater in the smolt-migration year, or</p> <p>(b) the end of the first sea-winter, if there is no return to freshwater in the smolt migration year, as indicated by wide annulus formation.</p>
<p>6. MIGRATORY TROUT (= SEA-TROUT)</p> <p>(a) 0-sea-winter migratory trout</p> <p>(b) 1-sea-winter migratory trout</p> <p>(c) 2-, 3-, (etc) sea-winter migratory trout</p> <p>(d) Previous spawner</p>	<p>All fish after the post-smolt stage</p> <p>Fish which has returned to freshwater in year of its smolt-migration.</p> <p>Fish which has returned to freshwater after 1 winter at sea.</p> <p>Fish which has returned to freshwater after 2, 3. (etc) winters at sea.</p> <p>Fish which has spawned on previous occasion(s) either as an 0-sea-winter migratory trout or after 1 or more sea-winters.</p>
7. KELT	<p>Spent or spawned-out migratory trout</p> <p>(a) until re-entry into salt water or</p> <p>(b) which shows re-growth on scales.</p>

	BELGIUM	CANADA	DENMARK
1.		Alevin, (fry)	Blomme yngel Spædyngel
2.		Fry, (advanced fry) (1)	Yngel
3.		Parr, Under-yearling (2) Yearling, Fingerling (3)	Ungørred $\frac{1}{2}$ års ørred = 0+ parr
4.		Smolt, trout peal, brown trout smolt.	Udvandrende ungørred, smolt
5.			
6.	Truite de mer Zeeforel	Sea-trout (4) sea-run brown trout	Havørred  Grønlaender
(b)			
(c)			
(d)		previous spawner	
7.		Sea-trout kelt (4) brown trout kelt	Nedfaldsørred

Notes: Canada

- (1) Stage for a period of 2 weeks following complete absorption of yolk sac.
- (2) Stage from 1 to 2 years old from date of hatch.
- (3) Stage from advanced fry to 1 year from date of hatch
- (4) This term also used for migratory Salvelinus fontinalis and Salmo gairdneri.



	FINLAND	FRANCE	W. GERMANY	HOLLAND
1.		Alevin vésiculé	Dottersackbrut	
2.		Alevin	FräBfähige Brut Vorgestreckte Brut	
3.		(Parr)	Setzling	
4.		(Smolt)	Auswandernder setzling	Jonge Zeeforel Jonge Schotzalm
5.				
6.	Taimen	Truite de mer	Meerforelle, (Lachsforelle)  Frühläicher  Mehrfachläicher	Zeeforel, Schotzalm
(b) (c) (d)				
7.			Jäger, Abgelaichte Meerforelle	

	REPUBLIC OF IRELAND	NORWAY	POLAND
1.	Alevin	Plommeseckkyngel	Wyleg
2.	Fry	Yngel (Småyngel)	Narybek
3.	Parr	Yngel-unger Yngel-ensomrigyngel = 0+ parr	Palesak, pertek, tegoroesny = 0+ parr
4.	Smolt	Utvandringsferdig Sjøaure, unger (smolt)	Smolt
5.			
6. (a) (b) (c) (d)	White trout	Sjø-aure  Bleke, Blenke, Blink  2 <sup>den</sup> (etc) gyter	Troć  Troćka, bialka  Wielokrotny, Tarlak 2-(etc) krotny
7.		Utgytt sjøaure, Utgytt bleke Vinterstøing, Elvestøing.	Troć po tarle

	SWEDEN	UNITED KINGDOM	U.S.A.
1.	Gulsäcksyngel	Alevin	Alevin
2.	Yngel	Fry	Fry
3.	Stirr	Parr 0+, 1+, 2+ etc	Parr Under-yearling = 0+ parr
4.	Smolt	Smolt	Smolt
5.		Post-smolt	
6.	Havsöring	Migratory trout, sea-trout Whitling, Peal, Finnock, Sewin 1 sea-winter migratory trout 2-, 3- (etc) sea winter migratory trout previous spawner	Sea-trout
7.	Utlekt Öring	Migratory trout kelt Sea-trout kelt, whitling, (etc) kelt.	