Northeast Fisheries Science Center Reference Document 06-21

A Laboratory Guide to the Identification of Marine Fish Eggs Collected on the Northeast Coast of the United States, 1977-1994

by Peter L. Berrien and John D. Sibunka

September 2006

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PREFACE

This report presents observations pertaining to the identification of marine fish eggs collected in continental shelf and slope waters of the northeast United States, which extends from south of Cape Hatteras to western Nova Scotia. The information included here encompasses the time period from 1977 to 1994. Most of the fish eggs were collected during the 11-year (1977-1987) MARMAP (Marine Resource Monitoring Assessment and Prediction) program, and additional egg data were obtained from post-MARMAP survey cruises from 1988 to 1994. The intention of this report was to compile the information used for fish egg identification by the Northeast Fisheries Science Center (NEFSC) with three specific objectives: 1) to provide descriptive notes for various fish taxa on their egg development from fertilization to hatching, 2) to document spawning times for the taxa collected for the four regions of the Northeast U.S. continental shelf, and 3) to present data on seasonal and regional variation in egg shell and oil globule diameters for various taxa.

Descriptive notes regarding the egg development of several known taxa are not supplied in this guide (e.g. *Brevoortia tyrannus*, *Scomber scombrus*). Information for them is available in the scientific literature. In addition to the more common taxa for which the identifications of the eggs were known, there were many unidentified eggs, some of which share similar characteristics. For these unidentified eggs we recorded egg size, shape and sculpturing; the presence or absence of an oil globule(s); the size and number of the oil globule(s); embryonic development and pigmentation patterns; geographic area(s) where they were collected; and time of year collected. These eggs had similar identification characteristics through progressive developmental stages and were considered a taxon. Unidentified eggs were assigned an in-house reference number (e.g., Unknown #90) for cataloging purposes with the intention that they might eventually be identified. Both known and unknown egg taxa were also catalogued in the NEFSC electronic data base using a nine digit bionumeric code for fishes (Bullis et al. 1972). This bionumeric code for all the unknown type eggs catalogued in the NEFSC database begins with 100 000 -- for the first six digits, and the last two or three digits are assigned the unique taxon reference number. If the unidentified taxon reference number contains only two digits then it will be preceded with a zero (e.g., Unknown #90 = 100 000 090). The bionumeric codes are given with the corresponding taxa discussed in this report.

Fish eggs were staged according to their development end points. The three principal egg stages commonly referred to in this guide are:

1. Early: represents the period from just spawned to the point of blastopore closure.
2. Middle: represents the period from blastopore closure to tail bud almost free.
3. Late: represents the period from tail bud free (i.e., slightly undercut) to just before hatching.

In the taxon discussions these three stages may be further subdivided for discussion. For example, a discussion of a middle stage may be further refined to: early-middle, middle-middle or late-middle. A late stage may also refer to the amount of embryonic encirclement around the yolk (e.g., ½~, which means that the embryo, from snout to tailtip, encircles half of the yolk circumference).

Ichthyoplankton samples collected at sea were initially hardened and preserved in a 5% formalin solution. The sorted fish eggs were archived in 3-4% formalin and are stored at the NEFSC Narragansett (RI) Laboratory. The identification of fish eggs and their measurements

was done using binocular microscopes fitted with calibrated ocular micrometers. Measurements for egg chorion and oil globule diameters were made to the nearest 0.01 millimeter. Sizes within parentheses represent minimum and maximum values observed. The heading dates listed indicate the most current addition or revision to the taxa/taxon presented.

This guide is not comprehensive; there are a number of unknown egg types and relatively little information for early and middle stage eggs. It is the authors' goal for this document to serve as a benchmark presenting the information on egg identification developed to date. By making this guide available, the authors hope to assist other researchers in the study of marine fish eggs and the application of early life stages to fisheries management questions (e.g., defining Essential Fish Habitat).

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Key to Abbreviations

Note: All months of the year are limited to the first three letters.

ant	=	anterior
approx	=	approximately
BL	=	body length
c	=	central (used as part of geographical location under the heading "Area")
dbl	=	double
dend	=	dendritic
diam	=	diameter
dors	=	dorsal
e, ea	=	early stage egg (used with the number of eggs measured under the heading "Obs")
exp	=	expanded
f-	=	fore-
ffold	=	fin fold
GB	=	Georges Bank
GOM	=	Gulf of Maine
h-	=	hind- (e.g. h-brain, h-gut)
homo	=	homogenous
in	=	inshore (used as part of geographical location under the heading "Area")
info	=	information
irreg	=	irregular
la	=	late
lat	=	lateral, laterally
MA, MAB	=	Middle Atlantic Bight
max	=	maximum

melan	=	melanophore
memb	=	membrane
m	=	middle stage egg (used with the number of eggs measured under the heading "Obs")
m-	=	mid- (e.g., mid-brain)
min	=	minimum
mon	=	month
multi	=	multiple
n	=	north (used as part of geographical location under the heading "Area")
ND	=	not defined
no.	=	number
NYB	=	New York Bight
obs	=	observed
off	=	offshore (used as part of geographical location under the heading "Area")
oil g,	=	oil globule
og	=	oil globule
pect	=	pectoral
pigm	=	pigment, pigmented, pigmentation
post	=	posterior
pr	=	pair
pt-to-pt	=	point-to-point
punct	=	punctate
Pv space	=	perivitelline space
s	=	south (used as part of geographical location under the heading "Area")
SAB	=	South Atlantic Bight
SD	=	standard deviation
scatt	=	scattered
segm	=	segmented
SN, SNE	=	Southern New England
spp	=	species
sta	=	station
stell	=	stellate
surf	=	surface
trans	=	transition
ttip	=	tailtip
Unk #	=	Unknown taxa number (e.g., Unk # 123)
w	=	west (used as part of geographical location under the heading "Area")

TAXA

All EGG Types, Known and Unknown

Oct 4, 1994

(Taxa listed alphabetically, Unknown types listed in numerical sequence)

Measurements for egg chorion and oil globule diameters were made to the nearest 0.01 millimeter. Sizes within parentheses represent minimum and maximum values observed.

Ammodytes spp. .81 (.77-.98) x .75 (.69-.92), og .19 (.18-.22), (Fahay 1983 reports og=.27); irregular shape, not quite spherical.

Anchoa hepsetus 1.50-1.63 (1.34-1.76) x .78-.87 (.73-.92); oval; no oil.

Anchoa mitchilli .88-.92 (.77-.99) x .73-.80 (.70-.85); oval; no oil.

Argentina silus 3.27-3.35 (3.01-3.47), og (1.06-1.29).

Brevoortia tyrannus 1.45-1.64 (1.44-1.81), og .15-.16 (.14-.18); wide perivitelline space; segmented yolk; melan tiny and occur in 2 dors-lat rows from head to tailtip.

Brosme brosme 1.28-1.31 (1.15-1.46), og .26-.28 (.24-.30); egg membrane finely pitted; melan dend and closely spaced in 2 distinct dors-lat rows.

Citharichthys/Etropus spp. .62-.74 (.55-.77), og .10-.14 (.07-.15); punct melan head to tailtip, some in finfold, few on yolk.

Clupea harengus 1.25-1.29 (1.20-1.35); no og; thick chorion, usually irreg shape.

Cynoscion regalis .69-.90 (.63-.94), og .18-.24 (.17-.26); densely scatt melan (ea-late), fewer later, mid-dors row; dark melan scatt on og.

Enchelyopus cimbrius .76-.88 (.66-.92), og .12-.20 (.09-.21); often sticky and float; melan relatively few, large and longitudinal.

Engraulis eurystole 1.02-1.25 x 0.50-0.80; segmented yolk; no pigm.

Gadus morhua 1.30-1.49 (1.20-1.64); no oil.

Glyptocephalus cynoglossus 1.27-1.34 (1.10-1.44); no oil.

Hippoglossoides platessoides 2.06-2.38 (1.80-2.67); no oil; wide perivitelline space.

Lophius americanus dbl memb, (1.43-1.70)= inner diam [outer membrane deciduous and might not be present], [outer diam=(1.60-1.90)]; og (.42-.50); spawned in veil of thousands of eggs.

Lopholatilus chamaeleonticeps 1.28-1.39 (1.28-1.41), og .19-.21 (.17-.24); pigm largely ventral on tail.

Maurolicus muelleri 1.54 -1.59 (1.37-1.75), inner .88-.89(.84-.92), og .23-.24 (.21-.25); double membrane, outer strongly sculpted, yolk segmented; no pigmentation (to 7/8~); slender embryo.

Melanogrammus aeglefinus 1.28-1.50 (1.22-1.61); no oil.

Merluccius albidus 1.06-1.11 (.99-1.21), og .31-.37 (.28-.38); usually sticky and float; dark and blotchy melanophore pattern; melan on embryo, oil g, finfold and yolk; melan on yolk in broad patches near anterior 1/2 of embryo.

Merluccius bilinearis .86-.97 (.81-1.03, to 1.13), og .23-.28 (.22-.31); usually sticky and float; melan on embryo, oil g, finfold and yolk; melan on yolk tend to be in broad patches near anterior 2/3's of embryo.

Ophichthus cruentifer 2.30-2.63 (2.10-2.81); og .30-.42 (.26-.55); wide perivitelline space; anguilliform; no pigm; newly spawned eggs are smaller (1.90+mm).

Paralichthys dentatus .97-1.02 (.92-1.07), og .19-.23 (.17-.24); dend melan scatt on embryo, og, finfold and yolk; on embryo melan tend to form a distinct mid-dorsal row.

Hippoglossina oblonga .84-1.03 (.79-1.08), og .14-.17 (.11-.20); punct melan on embryo, finfold, og and yolk; melan on yolk in broad patches near anterior 2/3's of embryo.

Peprilus triacanthus .71-.82 (.67-.84), og .17-.22 (.15-.25); melan (faint) head to tailtip, mostly in neural grooves, a couple may be ventral on post 1/4 body, a couple lat at mid-body.

Pleuronectes americanus .80-.82 (.73-.95) x .75-.81 (.69-.84); no oil; thick chorion.

Limanda ferruginea .82-.92 (.76-.96); no oil.

Pollachius virens .99-1.14 (.94-1.17); no oil.

Pomatomus saltatrix .87-.97 (.83-1.09), og .22-.29 (.19-.30); relatively large and dark melan snout to tailtip; may be a couple melan onto yolk in pect area; prominent dark melan just above anus.

Prionotus sp .93-1.08(.87-1.16); multi og; og no. 11-15 (6-25); og diam .08-.13(.04-.18); chorion often with red tint; dend (filmy and faint) melan on embryo, yolk, and patches in dors and anal finfold.

Rachycentron canadum 1.23 (1.18-1.27). og .32 (.27-.34); densely scatt melan ant to eyes (patch on snout); densely scatt dark melan on body dors and dors-lat and vent-lat to 95% BL; melan on og, but not in finfold or on yolk (5/8~).

Sarda sarda 1.19-1.26 (1.18-1.37), og (max=.27); og almost always multiple (2-10, or single and broken ?); tiny, punct and sparse melan.

Scomber scombrus 1.12-1.27 (1.07-1.35), og .29-.33 (.25-.35); melan dend and dark, snout to tailtip, and on og; none in finfold or on yolk (except 1 or 2 tight alongside pect area).

Scophthalmus aquosus .96-1.20 (.92-1.29), og .16-.22 (.14-.23); stell to dend melan densely scatt snout to tailtip; melan broadly scatt on yolk and into finfold.

Stenotomus chrysops .92-.97 (.89-1.02), og .18-.23 (.18-.25); melan generally dors, dend and somewhat sparse.

Symphurus spp. .57-.64 (.54-.66); multi og, og no. 7.4 (5-11); og diam .06 (.05-.07).

Tautoga onitis .96-1.10 (.95-1.14); no oil.

Tautogolabrus adspersus .84-.96 (.78-1.00); no oil.

Trinectes maculatus (.70-.79); multi og, og no. (15-20); og diam [no info].

Uranoscopidae 1.47-1.59 (1.40-1.71), og .27-.33 (.22-.35); very fine sculpting or pitting of surface.

Urophycis spp. .67-.76 (.63-.83), og .17-.23 (.15-.26); distinct dark melan on embryo, yolk and oil g.

Zu cristata (2.30); no oil.

Unk #63: .91-.95 (.88-.99) x .85-.92 (.81-.95); no oil; almost spherical to oval, some collapsed; virtually no pigm.

Unk #67: .87-.93 (.83-.97), og .22-.26 (.21-.27); approx 45 myomeres; punct melan in 2 precise dors-lat rows to tailtip.

Unk #86: (2.70); multi og; og no. [no info]; og diam (approx .05); no pigmentation (?).

Unk #90: .80-.91 (.77-.95), og .14-.16 (.13-.18); og anterior (late); melan relatively few and dark, dors and vent; melan into ffold at 3/4~.

Unk #91: 1.01-1.03 (.99-1.10) x .97-.98 (.93-1.03); no oil; almost spherical, slightly oval; numerous tiny melan on embryo.

Unk #95: .74 (.72-.88); multi og, og no. (15-20); og diam [no info]; punct melan scatt dors and lat snout to tailtip; scatt on yolk.

Unk #99: .62 (.59-.70); multi og, og no. (7-14); og diam (.04-.08); no pigm at 5/8~; light dors pigm on embryo and melan in dors and anal finfolds at full~; membrane may have reddish tint.

Unk #106: .91-.94 (.88-.95), og .17(.10-.19); yolk segmented, approx 45-50 myomeres; melan only in caudal finfold at 1 1/16~.

Unk #113: (2.14-2.30); no oil; segmented yolk.

Unk #125: 1.64-1.72 (1.51-1.79) & 1.60-1.68 (1.48-1.73); dbl memb; no oil; no pigm (1 1/4~); anus at 7/8 BL.

Unk #126: Dbl memb, .96 (.89-.99) and .88 (.82-.92); no oil; segmented yolk; no pigm (1/2 - 5/8~).

Unk #127: .90-.97 (.89-1.00) x .90-.93 (.84-.97); no oil; most are non-spherical; pigmented, numerous minute melan [more pigm than Unk #63].

Unk #134: (.69-.75); no oil; segmented yolk; no pigm (7/8~).

Unk #140: (.74), og (.21), segmented yolk, pustules on shell, melan on embryo, oil g and yolk.

Unk #147: .92-.93 (.89-.96), og .25-.26 (.22-.26); oil g anterior; melan lat to h-brain then post as 1 mid-dors row; a few in anal finfold.

Unk #148: (approx 1.34 ?), og (.46); no pigm except on eyes (1 1/8~).

Unk #152: (.92-.96), og (.23); slender embryo; at ea-late, melan from behind head to tailtip.

Unk #156: 1.08 (1.08-1.11), og .23 (.23); sparse and punct melan scatt dors to about 3/4 BL; couple on ventrum post to anus; none on yolk or in finfold (3/4-7/8~).

Unk #168: .68-.72 (.66-.73), og .16-.17 (.15-.18); small melan snout to tailtip; og larger than *Citharichthys/Etropus* spp.

Unk #169: .82 (.82-.83), og (.12); 50+ myomeres; no pigmentation (3/4 - 7/8~).

Unk #170: Dbl memb, .71 (.69-.74) and .68 (.65-.72); no oil; segmented yolk; no pigm (5/8~); slender embryo.

Unk #173: (.93-.99), inner (.89-.95), og (.10); double membrane, yolk segmented.

Unk #175: Dbl memb, 1.84 (1.80-1.91) and 1.72 (1.71-1.77); no oil; h-gut long and bifurcated; faint punct melan (at 1 1/2~) on ventrum of body, on h-gut and in eyes.

Unk #176: .68-.70 (.64-.73), og .16-.19 (.15-.21); sparse melan on embryo, prominent patch on proximal surf of oil g.

Unk #178: .75-.77 (.73-.78), og .17-.18 (.15-.19); yolk finely segmented in part; melan on head, lat to h-brain then converge to dors mid-line.

Unk #179: (.68-.77), og (.20 or less); scatt dend melan on embryo, og and yolk.

Unk #180: .73-.81 (.71-.84), og .19-.24 (.18-.24); very similar to *Peprilus* but occurs in the fall.

Unk #181: (1.40-1.50); multi og, og no. [no info]; og diam [no info]; pigmentation information lacking.

Unk #183: .62-.64 (.62-.64), og .13 (.11-.13); og ant (late); dors-lat patches on caudal peduncle, and other melan.

Unk #184: (1.07-1.10), og (.15-.21); "numerous" myomeres; pigm is restricted to a small cluster of melan ventral to tailtip (3/4-7/8~).

Unk #185: .65 (.64-.70), og .13 (.11-.15); melan tiny, present on head, over h-brain and on ventrum of post 1/3 body, none in ffold.

Unk #186: (.79); multi og, og no. [no info]; og diam [no info]; "lots of pigmentation on embryo".

Unk #187: (.50), og (.10); sculpted; (Myctophidae?).

Unk #191: 1.89 (1.83-1.95), lesser diam 1.76 (1.60-1.76), og (.53); oval shape; pigm present (descriptive info lacking).

Unk #193: (.77); multi og; og no. (approx 35); og diam [no info]; pigm info lacking.

Unk #195: (3.10-3.11); no oil; advanced development at 5/8~; numerous punct melan on ant 2/3 body.

Unk #198: (1.03-1.10); multi og; og no. (10); og diam (.06-.08); wide perivitelline space; egg membrane with internal pustules; punct melan on dors, a few vent; sparsely scatt on yolk.

Unk #199: .68-.76 (.65-.79), inner .60 (.60-.61), og (.20-.23), Double membrane, sculpted, outer memb deciduous.

Unk #200: .79 (.75-.84), og .22 (.20-.23); yolk homog or perhaps finely segmented; melan on embryo and yolk; distinct small patch on ventrum of yolk.

Unk #201: 1.16 (1.11-1.18), dbl memb, inner 1.12 (1.05-1.14), og .32 (.30-.35); segmented yolk; no pigmentation at 1/2~.

Unk #202: (.73-.76), og (.20); "snout patch" of melan, other melan head to tailtip; at full~ a "saddle" of melan at 3/4 BL.

Unk #203: 1.52-1.67 (1.48-1.68), og .37-.41 (.35-.41); copper tint to chorion; smooth chorion; numerous myomeres; three distinct pairs of melan patches (head, post to h-brain and at 9/10 BL).

Unk #204: (1.50), og (.38); 70-80 myomeres; melan dend and light, occur on embryo, finfold, yolk and oil g; melan conspicuous on head in neural grooves and as a thin, but dark mid-dors line at mid-body extending over 1/10 BL.

Unk #205: 1.48 (1.45-1.53), og (.10-.12); very low relief sculpturing (orange-peel like surface).

Unk #206: 2.79-2.93 (2.74-2.95), og .21-.25 (.19-.30); approx 125 myomeres; wide perivitelline space; anguilliform; see description.

Unk #207: (.88-.90); no oil; a few faint melan on post 1/2 body (at 5/8~).

Unk #208: .78-.79 (.78-.80), og .18-.22 (.18-.23); segmented yolk.

Unk #209: (1.78), og (.10); no pigm at mid-middle.

Unk #210: .82 (.78-.85), og .15 (.15-.19); yolk strongly segmented, no pigmentation at 7/8~.

Unk #211: sculpted (coarsely); pt-to-pt 1.03-1.04 (.96-1.08), smooth .99-1.00 (.94-1.03); no oil; pigm like a lightly pigm *T. onitis*.

Unk #212: sculpted (finely); pt-to-pt 1.30-1.32 (1.18-1.39), smooth 1.27-1.30 (1.21-1.37); no oil; two dors-lat rows of melan.

Unk #213: 1.47 (1.42-1.52); multi og; og no. (10-15); og diam (.10-.15); darkly pigm areas on head and striking band at about 2/3 BL; yolk densely pigm; pect buds pigm. (Soleidae ?).

Unk #214: (1.41); no oil; at 7/8~ broad head, heavy-bodied embryo, fan-like pectorals; punct melan lightly scatt on head, body and fins.

Unk #215: (1.00-1.03), og (.25-.27); approx 45-50 myomeres; prominent melan patch on snout; dark melan post to eyes, lat to h-brain, post as 2 dark dors-lat rows; also a ventral row from abdomen to 9/10 BL.

Unk #216: 1.01 (.98-1.05), og .22 (.21-.26); Paralichthys-type pigment, geography and season preclude calling this *P. dentatus*.

Unk #217: .76-.80 (.74-.81); no oil; segmented yolk; no pigment (at full~).

Unk #218: .82 (.80-.84); og .15 (.14-.15); melan on embryo and oil g; distinct small cluster of melan on dorsum of oil g.

Unk #219: Dbl memb; (.78), inner (.70), og (.21); no pigment at 5/8~.

Unk #220: Dbl memb; (1.10-1.28), inner (1.07-1.09), og (.28-.35); yolk strongly segmented; no melan at 7/8~ .

Unk #221: (.82), og "small"; yolk strongly segmented.

Unk #222: sculpted (finely ?); pt-to-pt 1.24 (1.22-1.25), smooth 1.18 (1.16-1.20); no oil; dend melan scatt lat and ventrally; spot on vent.

Unk #223: .74 (.72-.76), og .14 (.13-.16); og ant-vent at 7/8~; yolk homog to finely segm; pigment like *T. adspersus*, but with og.

Unk #224: 2.22 (1.96-2.29), og .31 (.30-.32); 100+ myomeres; yolk may be finely segm; anguilliform; see description.

Unk #225: (1.20), og (.29); approx 75-80 myomeres; a few melan on snout, a few on dorsum of gut, a prominent pair of vent-lat melan at 7/8 BL, a few in loose patch on yolk beneath head, and a few scatt on oil g (15/16~).

Unk #226: (.97), og (.22); tiny punct melan (few), scatt on head and dorsum of mid-body area; none in finfold or on yolk (9/10~); a few on og.

Unk #227: (.93-.96); multi og, og no. (15-20); og diam (.04-.07); One ventral melan. at 9/10 BL (at 7/8~).

Unk #228: .83 (.80-.84), og (<.23, exp); some slightly oval and some slightly collapsed; a narrow embryo; melan on embryo and yolk (on oil g?).

Unk #229: (2.40-2.57); no oil; sculpted (very finely); numerous myomeres; melan on ant 1/2 embryo and in large patches on yolk.

Unk #230: (.90), og (.19); no pigmentation (5/8~).

Unk #231: (.82), og (.23); pigm like a lightly pigmented *C. regalis* but with melan on yolk.

Unk #232: (1.42), og (.30); yolk partially segmented? ; approx 35 myomeres; broad finfold (1 1/8~); melan dors-lat rows on head; then dors, lat and vent to anus; then post as dors and vent double rows; on yolk melan in large patches near head and abdomen.

Unk #233: .76-.77 (.73-.83); no oil; yolk homogeneous and opaque (or perhaps finely segmented); scatt dors and dors-lat melan, couple ventral; melan scatt on yolk vent or ant.

Unk #234: (.91-.93), og (.15); at 3/4~, a very few punct and tiny melan, on dorsum of head and abdomen, couple lat at mid-body, couple in anal finfold; anus at 3/4 BL; approx 50 myomeres.

Unk #235: (.86); no oil; myomeres approx 40; at ea-late few (14), tiny, punct and faint melan on dors and dors-lat aspects of abdomen.

Unk #236: .89-.91 (.87-.94), og .23 (.21-.25); approx 43-44 myomeres; punct and dark melan on embryo and on dors 1/3 oil g.

Unk #237: (.84), og (.20); yolk segmented(?), melan large, dark and few; melan paired on head and in single mid-dors row over middle half of body; no ventral melan; small patch or single large melan on yolk ventrum.

Unk #238: (1.98); no oil; wide perivitelline space; segmented yolk; slender embryo; no melan (full~); myomeres approx 55+30 to 40; gut ends at approx 7/8 to 9/10 BL.

Unk #239: (1.80), og (0.36); slightly non-spherical; egg membrane opaque, hard, and yellowish; yolk indistinctly segmented; no pigmentation (3/4~); head large in comparison to rest of embryo.

Single Oil Globule "Normal" Types (listed by size) Oct 5, 1994

Measurements for egg chorion and oil globule diameters were made to the nearest 0.01 millimeter. Sizes within parentheses represent minimum and maximum values observed.

Unk #183: .62-.64 (.62-.64), og .13 (.11-.13); og ant (late); dors-lat patches on caudal peduncle, and other melan.

Citharichthys/Etropus spp. .62-.74 (.55-.77), og .10-.14 (.07-.15); punct melan head to tailtip, some in finfold, few on yolk.

Unk #185: .65 (.64-.70), og .13 (.11-.15); melan tiny, present on head, over h-brain and on ventrum of post 1/3 body, none in ffold.

Unk #176: .68-.70 (.64-.73), og .16-.19 (.15-.21); melan in sparse dorsal midline on embryo, prominent patch on proximal surf of oil g.

Unk #168: .68-.72 (.66-.73), og .16-.17 (.15-.18); small melan snout to tailtip; og larger than *Citharichthys/Etropus* spp.

Urophycis spp. .69-.76 (.65-.81), og .17-.23 (.15-.26); distinct dark melan on embryo, yolk and oil g.

Unk #179: (.68-.77), og (.20 or less); scatt dend melan on embryo, og and yolk.

Peprilus triacanthus .71-.82 (.67-.84), og .17-.22 (.15-.25); melan (faint) head to tailtip, mostly in neural grooves, a couple may be ventral on post 1/4 body, a couple lat at mid-body.

Unk #202: (.73-.76), og (.20); "snout patch" of melan, other melan head to tailtip; at full~ a "saddle" of melan at 3/4 BL.

Unk #180: .73-.81 (.71-.84), og .19-.24 (.18-.24); very similar to *Peprilus*, but with more melan mid-dors as Middle and ea_Late stages; occurs in the fall.

Unk #223: .74 (.72-.76), og .14 (.13-.16); og ant-vent at 7/8~; yolk homog to finely segm; pigment like *T. adspersus*, but with og.

Unk #178: .75-.77 (.73-.78), og .17-.18 (.15-.19); yolk finely segmented in part; melan on head, lat to h-brain then converge to dors mid-line.

Cynoscion regalis .69-.90 (.63-.94), og .18-.24 (.17-.26); densely scatt melan (ea-late), fewer later, mid-dors row; dark melan scatt on og.

Enchelyopus cimbrius .76-.88 (.66-.92), og .14-.20 (.11-.21); often sticky and float; melan relatively few, large and longitudinal.

Unk #90: .80-.91 (.77-.95), og .14-.16 (.13-.18); og anterior (late); melan relatively few and dark, dors and vent; melan into ffold at 3/4~.

Unk #200: .79 (.75-.84), og .22 (.20-.23); yolk homog or perhaps finely segmented; melan on embryo and yolk; distinct small patch on ventrum of yolk.

Unk #218: .82 (.80-.84); og .15 (.14-.15); melan on embryo and oil g; distinct small cluster of melan on dorsum of oil g.

Unk #169: .82 (.82-.83), og (.12); 50+ myomeres; no pigmentation (3/4 - 7/8~).

Unk #231: (.82), og (.23); pigm like a lightly pigmented *C. regalis* but with melan on yolk.

Unk #228: .83 (.80-.84), og (<.23, exp); some slightly oval and some slightly collapsed; a narrow embryo; melan on embryo and yolk (on oil g?).

Unk #237: (.84), og (.20); yolk segmented(?), melan large, dark and few; melan paired on head and in single mid-dors row over middle half of body; no ventral melan; small patch or single large melan on yolk ventrum.

Hippoglossina oblonga .84-.97 (.79-1.01), og .14-.17 (.11-.20); punct melan on embryo, finfold, og and yolk; melan on yolk in broad patches near anterior 2/3's of embryo; GOM, Jun-Sep; GB, Apr-Oct.

Merluccius bilinearis .86-.97 (.81-1.03, to 1.13), og .23-.28 (.22-.31); usually sticky and float; melan on embryo, oil g, finfold and yolk; melan on yolk tend to be in broad patches near anterior 2/3's of embryo.

Unk #67: .87-.93 (.83-.97), og .22-.26 (.21-.27); approx 45 myomeres; punct melan in 2 precise dors-lat rows to tailtip.

Pomatomus saltatrix .87-.97 (.83-1.09), og .22-.29 (.19-.30); relatively large and dark melan snout to tailtip; may be a couple melan onto yolk in pect area; prominent dark melan just above anus.

Unk #236: .89-.91 (.87-.94), og .23 (.21-.25); punct melan, first in 2 dors-lat rows, then becoming more scatt; melan on yolk (similar to *M.bilinearis*); approx 43-44 myomeres.

Unk #230: (.90), og (.19); no pigmentation (5/8~); approx 25-30 myomeres.

Unk #234: (.91-.93), og (.15); at 3/4~, a very few punct and tiny melan, on dorsum of head and abdomen, couple lat at mid-body, couple in anal finfold; anus at 3/4 BL; approx 50 myomeres.

Unk #152: (.92-.96), og (.23); slender embryo; at ea-late, melan from behind head to tailtip.

Stenotomus chrysops .92-.97 (.89-1.02), og .18-.23 (.18-.25); melan generally dors, dend and somewhat sparse.

Unk #147: .92-.93 (.89-.96), og .25-.26 (.22-.26); oil g anterior; melan lat to h-brain then post as 1 mid-dors row; a few in anal finfold.

Scophthalmus aquosus .96-1.20 (.92-1.29), og .16-.22 (.14-.23); stell to dend melan densely scatt snout to tailtip; melan broadly scatt on yolk and into finfold.

Unk #226: (.97), og (.22); tiny punct melan (few), scatt on head and dorsum of mid-body area; none in finfold or on yolk (9/10~); a few on og.

Paralichthys dentatus .97-1.02 (.92-1.07), og .19-.23 (.17-.24); dend melan scatt on embryo, og, finfold and yolk; on embryo melan tend to form a distinct mid-dorsal row.

Unk #215: (1.00-1.03), og (.25-.27); approx 45-50 myomeres; prominent <u>melan patch on snout</u>; dark melan post to eyes, lat to h-brain, post as 2 dark dors-lat rows; also a ventral row from abdomen to 9/10 BL.

Unk #216: 1.01 (.98-1.05), og .22 (.21-.26); <u>Paralichthys-type pigment</u>, geography and season preclude calling this *P. dentatus*.

Unk #184: (1.07-1.10), og (.15-.21); "numerous" myomeres; pigment is restricted to a <u>small cluster of melan ventral to tailtip</u> (3/4-7/8~).

Merluccius albidus 1.06-1.11 (.99-1.21), og .31-.37 (.28-.38); <u>usually sticky and float</u>; dark and blotchy melanophore pattern; melan on embryo, oil g, finfold and yolk; melan on yolk in broad patches near anterior 1/2 of embryo.

Unk #156: 1.08 (1.08-1.11), og .23 (.23); sparse and punct melan scatt dors to about 3/4 BL; couple on ventrum post to anus; none on yolk or in finfold (3/4-7/8~).

Scomber scombrus 1.12-1.27 (1.07-1.35), og .29-.33 (.25-.35); melan dend and dark, snout to tailtip, and on og; none in finfold or on yolk (except 1 or 2 tight alongside pect area).

Rachycentron canadum 1.23 (1.18-1.27). og .32 (.27-.34); densely scatt melan ant to eyes (patch on snout); densely scatt dark melan on body dors and dors-lat and vent-lat to 95% BL; melan on og, but not in finfold or on yolk (5/8~).

Sarda sarda 1.19-1.26 (1.18-1.37), og (max=.27); og almost always multiple (single and broken ?); tiny, punct and sparse melan.

Unk #225: (1.20), og (.29); approx 75-80 myomeres; a few melan on snout, a few on dorsum of gut, a prominent pair of vent-lat melan at 7/8 BL, a few in loose patch on yolk beneath head, and a few scatt on oil g (15/16~).

Brosme brosme 1.28-1.31 (1.15-1.46), og .26-.28 (.24-.30); egg membrane finely pitted; dend and closely spaced melan in 2 distinct dors-lat rows.

Lopholatilus chamaeleonticeps 1.28-1.39 (1.28-1.41), og .19-.21 (.17-.24); pigment largely ventral on tail.

Unk #148: (approx 1.34 ?), og (.46); no pigm except on eyes (1 1/8~).

Unk #232: (1.42), og (.30); yolk partially segmented? ; approx 35 myomeres; broad finfold (1 1/8~); melan dors-lat rows on head; then dors, lat and vent to anus; then post as dors and vent double rows; on yolk melan in large patches near head and abdomen.

Lophius americanus Dbl membrane; inner diam=(1.43-1.70); outer of 2 membranes is deciduous and might not be present; outer diam=(1.60-1.90)]; og (.42-.50).

Brevoortia tyrannus 1.45-1.64 (1.44-1.81), og .15-.16 (.14-.18); wide perivitelline space; melan tiny and occur in 2 dors-lat rows from head to tailtip.

Uranoscopidae 1.47-1.59 (1.40-1.71), og .27-.33 (.22-.35); fine sculpturing or pitting of surface.

Unk #205: 1.48 (1.45-1.53), og (.10-.12); very low relief sculpturing (orange-peel like surface).

Unk #204: (1.50), og (.38); 70-80 myomeres; melan dend and light, occur on embryo, finfold, yolk and oil g; melan conspicuous on head in neural grooves and as a thin, but dark mid-dors line at mid-body extending over 1/10 BL.

Unk #203: 1.52-1.67 (1.48-1.68), og .37-.41 (.35-.41); copper tint to chorion; chorion smooth; numerous myomeres; three distinct pairs of melan patches (head, post to h-brain and at 9/10 BL).

Unk #209: (1.78), og (.10); no pigm at mid-middle.

Unk #224: 2.22 (1.96-2.29), og .31 (.30-.32); 100+ myomeres; yolk may be finely segm; anguilliform; see description.

Ophichthus cruentifer 2.30-2.63 (2.10-2.81); og .30-.42 (.26-.55); wide perivitelline space; anguilliform; no pigment; newly spawned eggs are smaller (1.90+mm).

Unk #206: 2.79-2.93 (2.74-2.95), og .21-.25 (.19-.30); approx 125 myomeres; wide perivitelline space; anguilliform; see description.

Argentina silus 3.27-3.35 (3.01-3.47), og (1.06-1.29).

Unknown #183 Taxon Code: 100 000 183 Sep 23, 1992

[may confuse this with *Citharichthys/Etropus* spp.]

Shape and size: Spherical; .62-.64 (.62-.64)

Oil g: Single; .13 (.11-.13); anterior in late stage
Egg membrane: Smooth, clear and colorless
Yolk: Homogeneous
Pv space: Narrow (normal)
Myomeres:
Spawning: MAB: May (south), Nov
SAB: Apr

Pigmentation and form:

LATE "dark dorsal melan" noted on old ident sheets.
full~: Notes indicate prominent pair of dors-lat splotches on caudal peduncle. Although there are no further comments, there probably is other pigmentation.

Unknown #183, observed sizes Jul 18, 1989

Summary: .62-.64 (.62-.64), og .13 (.11-.13)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
MA s	May	3	.62	.000	.62	.62	-	.-	.-	.11	.12	DL8003	3
SA	Apr	3	.64	.006	.63	.64	3	.13	.000	.13	.13	DL8503	141

* Observations are of late-stage eggs unless noted otherwise.

***Citharichthys/Etropus* spp.** Taxon Code: 100 000 026 Sep 16, 1992

Shape and size:	Spherical; .62-.74 (.55-.77)
Oil g:	Single; .10-.14 (.07-.15)
Egg membrane:	Single, smooth, clear and colorless
Yolk:	Homogeneous
Pv space:	Narrow (normal)
Myomeres:	
Spawning:	GOM: May-Aug, Oct GB: Apr-Oct SNE: Apr-Nov MAB: Jan-Nov

Pigmentation and form:

LATE

ea-Late: Minute, punct melan sparsely scatt (not in rows) on dors and dors-lat aspects of embryo from head (between eyes in some) almost to tailtip. Also sparsely scatt on dors 1/2 yolk. Not yet on oil g.

5/8~, twisted, and flexing: Punct melan sparsely scatt (not rows) on dors and dors-lat aspects of embryo from head (perhaps) post to tailtip. Melan relatively more prominent and numerous on post 1/3 body. May or may not have melan sparsely scatt on yolk. Not yet on oil g.

11/16~, flexed: Similar to those 5/8~; finfold forming now. Dors melan on post 1/3 of body tend to line up along base of finfold and begin migrating <u>into</u> finfold. Same with ventral melan post to h-gut; these vent melan move into finfold before dors melan move. There tends to be a dark ventral series near tailtip. None yet visible on oil g.

3/4~: Punct melan sparsely scatt on dors of head and sort of dors-lat to h-brain. Then post as rows of melan in dors and anal finfolds with a few also sparsely scatt lat on ant 1/2 of body. Those in finfolds line up in rows at approx 1/2 way between proximal and distal edges along most of finfold but converging to proximal edge (of embryo body) near the tailtip [similar to *P. dentatus*]. Now rare on yolk surface -- perhaps a couple on yolk in vicinity of h-gut and oil g.

Citharichthys/Etropus spp., observed sizes Oct 3, 1994

Summary: .62-.74 (.55-.77), og .10-.14 (.07-.15)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
GB	Aug	11	.71	.013	.70	.74	11	.13	.011	.11	.14	AL8507	372
SN	Jul	10	.71	.018	.68	.74	10	.13	.017	.11	.15	DL8604	177
SN w	Jul	10	.71	.018	.68	.74	10	.12	.010	.11	.13	DL8604	234
SN	Aug	10	.74	.017	.71	.77	10	.11	.011	.09	.12	BE7901	61
SN	Aug	5	.74	.018	.71	.76	5	.12	.008	.11	.13	AL8507	292
SN	Aug	10	.69	.018	.66	.72	10	.11	.014	.07	.13	DL8708	72
SN	Sep	10	.71	.017	.67	.73	10	.11	.000	.11	.11	DL9110	162
SN	Oct	10	.71	.022	.68	.76	10	.11	.012	.09	.13	DL8608	171
SN	Oct	10	.72	.009	.71	.73	10	.11	.012	.09	.13	DL8906	175
SN	Oct	10	.64	.194	.66	.76	10	.13	.000	.13	.13	AL9211	171
MA s off	May	17	.62	.055	.55	.70	17	.10	.016	.07	.13	DL8603	1
MA n	Jun	10	.67	.023	.63	.70	0	.-	.-	.-	.-	DL8604	65
MA	Jul	6	.72	.015	.70	.74	6	.14	.013	.12	.15	AL7906	31
MA	Jul	15	.72	.019	.69	.76	14	.11	.006	.10	.13	AL8507	69
MA	Sep	10	.62	.008	.61	.63	10	.11	.015	.09	.15	AL8707	57

* Observations are of late-stage eggs unless noted otherwise.

Unknown #185 Taxon Code: 100 000 185 Sep 23, 1992

Shape and size: Spherical; .65 (.64-.70)

Oil g: Single; .13 (.11-.15)
Egg membrane: Smooth, clear and colorless
Yolk: Homogeneous
Pv space: Narrow (normal)
Myomeres: appear "normal" (approx 25-30)
Spawning: MAB: Mar, May, Aug, Sep
SAB: Aug

Pigmentation and form:

LATE

7/8~: Oil g posterior. Melan tiny punct and somewhat faint (hard to see). Melan scatt on head and over h-brain, lat to h-brain, on ventrum of post 1/3 of body, couple also on dors or lat areas of post 1/3 of body, and a couple on yolk near abdomen. No melan seen in ffold nor on oil g (although due to faintness of these specimens it might exist on oil g but not seen). Oil g post to vent-post.

Unknown #185, observed sizes

Summary: diam .65 (.64-.70), og .13 (.11-.15)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
MA s	May	1e,2	.-	.-	.66	.70	3	.-	.-	.12	.13	DL8003	3
MA s	Aug	4	.65	.011	.64	.66	4	.13	.013	.12	.15	DL8507	18
MA s	Aug	1	.-	.-	.65	.65	1	.-	.-	.11	.11	DL8607	9

* Observations are of late-stage eggs unless noted otherwise.

Unknown #176 Taxon Code: 111 000 176 Sep 22, 1992

["Patch on oil g"]

Shape and size:	Spherical; .68-.70 (.64-.73)
Oil g:	Single; .16-.19 (.15-.21), ventral (ea-Mid) to ant-vent
Egg membrane:	Smooth, clear and colorless
Yolk:	Homogeneous
Pv space:	Narrow (normal)
Myomeres:	
Spawning:	SNE: Jul, Sep MAB: May, Jul-Sep SAB: Aug

Pigmentation and form:

LATE

5/8 to 3/4~: Melan sparse on embryo; only 15 to 20 tiny, punct melan on dorsum from behind eyes almost to tailtip. Prominent tight cluster of melan (or 1 large melan) on proximal side of oil g.

7/8~: Same cluster of melan on prox surface of oil g. Otherwise melan (approx 20 to 25) punct to slightly stellate, generally dorsal, from dorsum of m-brain posteriad, dors-lat to h-brain then converge to a loose, sparse row on dorsum to approx 9/10 BL. None in finfold or on yolk.

Unknown #176, observed sizes Jul 18, 1989

Summary: .68-.70 (.64-.73), og .16-.19 (.15-.21)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
MA s	Jul	-	.69	.-	.64	.73	-	.16	.-	.15	.17	EV8006	2
MA s	Jul	8	.70	.020	.67	.72	8	.19	.011	.17	.21	AL8507	142
MA s	Aug	4	.70	.014	.68	.71	3	.16	.012	.15	.17	BE7901	1
MA s	Aug	6	.68	.007	.67	.69	5	.16	.007	.15	.17	DL8507	18

* Observations are of late-stage eggs unless noted otherwise.

Unknown #168 Taxon Code: 100 000 168 Sep 22, 1992

[may confuse this with *Citharichthys/Etropus* spp.]

Shape and size: Spherical; .68-.72 (.66-.73)

Oil g: Single; .16-.17 (.15-.18); [larger than in *Citharichthys/Etropus* spp.]
Egg membrane: Smooth, clear and colorless
Yolk: Homogeneous
Pv space: Narrow (normal)
Myomeres: approx 26 to 28 ("normal")
Spawning: MAB: May-Jul, south, inshore
SAB: Mar

Pigmentation and form:

LATE

ea-Late: Scatt small to punct melan from snout and between eyes back to tailtip; a couple lat at midbody and a couple vent-lat on post 1/5 of body. Melan scatt on proximal 1/2 of oil g. oil g post. [Oil g larger than in *Citharichthys/Etropus* spp.].

5/8~: Tail twisting to twisted at this stage.

Unknown #168, observed sizes Jul 18, 1989

Summary: .68-.72 (.66-.73), og .16-.17 (.15-.18)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
MA s	Jun	10	.68	.017	.66	.71	10	.16	.007	.15	.18	AL7906	3
MA s	Jul	5	.72	.012	.70	.73	5	.17	.007	.16	.18	EV8006	4

* Observations are of late-stage eggs unless noted otherwise.

***Urophycis* spp.** Taxon Code: 148 010 100 Oct 4, 1994

Shape and size: Spherical; .67-.76 (.63-.83)

Oil g:	Single; .17-.23 (.15-.26)
Egg membrane:	Smooth, clear and colorless
Yolk:	Homogeneous
Myomeres:	
Pv space:	Narrow (normal)
Spawning:	GOM: Apr-Nov
	GB: Jan,Mar-Dec
	SNE: Jan-Dec
	MAB: Jan-Dec
	SAB: Mar-Apr

Pigmentation and form:

EARLY

Epiboly 3/4: Pigment begins; clusters of tiny melan barely visible on yolk membrane lat to developing tail-tip.

Epiboly almost complete: Melan small dark and slightly stell. Melan on embryo in 2 slightly sloppy dors-lat rows from just behind eyes to ttip and extending vaguely beyond and around the blastopore. Several melan widely scatt on dors 2/3 yolk. None (yet) on oil g.

MIDDLE

ea- to mid-Mid: Similar to above but with more melan in the dors-lat rows making these rows broader, more like 2 swaths; extending forward to mid-eyes. Loosely scatt melan over entire yolk with concentration near ttip and oil globule, but not yet on oil g.

la-Mid: Melan larger and fewer; a couple as far forward as snout, then post as 2 neat dors-lat rows of large dark (not dend) melan to ttip. The rows are double at mid-body and on post 1/5 body (precursors of lat and vent pigment). Melan widely scatt on yolk; now a few on oil globule (concentrated towards ttip); those which were near oil g apparently migrated onto oil g.

LATE

ea-Late: Melan dark, larger and fewer. Two striking dors-lat rows from snout to ttip composed of approx 15 to 20 melan each; a couple of melan lat and vent at ttip. Dark and bold melan widely scatt on yolk; several scatt on dors 1/2 of og.

5/8-3/4~, twisting : Large, dark and blotchy melan on embryo, yolk and oil globule. Two bold rows from top of head to ttip which are discrete to approx 7/8 BL, where body twists, and tend to merge on post 1/8 body. 1 or 2 blotchy melan vent on post 1/8 body. A few dark melan widely scatt on yolk and on oil g. None in ffold (just forming).

Full~: Eye pigm just beginning (at post edges). Melan dark and relatively large; fewer now. A few (3-8) melan on head dors, generally in neural grooves; a few dors-lat by h-brain; on post 1/2 body there's a mid-dors row of few (3-5), large melan, each of which extends partly into the dors ffold; ventrally there's one large dark melan at 3/4 BL which extends partly into the anal ffold. A few large dark melan scatt on yolk (generally some of them beneath the head), and a few scatt on oil g. Generally, the appearance of large blotchy melan make this stage stand out.

Urophycis spp., observed sizes Oct 4, 1994

Summary: .67-.77 (.63-.83), og .16-.23 (.15-.26)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
GM	Sep	6	.69	.015	.66	.70	6	.17	.015	.15	.18	DL8607	157
GM	Sep	10	.70	.036	.66	.77	10	.18	.013	.15	.18	DL8708	175
GB	Jul	10	.73	.008	.72	.74	10	.18	.015	.17	.20	DL8604	328
GB	Oct	11	.70	.029	.65	.74	11	.17	.012	.15	.18	DL8608	197
GB s off	Oct	10	.70	.020	.66	.72	10	.19	.010	.16	.19	DL9311	235
SN	May	10	.73	.044	.68	.81	10	.19	.037	.17	.26	DL8603	145
SN	Jul	10	.72	.018	.70	.76	10	.19	.009	.18	.20	DL8604	174
SN	Aug	12	.72	.012	.69	.74	12	.18	.006	.17	.19	AL8507	281
SN	Aug	11	.72	.019	.69	.75	11	.19	.006	.18	.19	AL8507	292
SN	Aug	24	.71	.020	.69	.78	24	.18	.009	.16	.19	AL8507	298
SN	Sep	10	.70	.015	.68	.72	10	.18	.008	.17	.18	DL8708	93
SN	Sep	10	.68	.020	.64	.71	10	.16	.012	.15	.18	DL9011	148
SN	Sep	10	.68	.029	.64	.73	10	.18	.017	.16	.20	DL9011	175
SN	Sep	10	.69	.012	.67	.71	10	.18	.006	.16	.18	DL9110	162
SN	Sep	10	.67	.033	.63	.72	10	.19	.010	.16	.19	DL9311	122
SN	Sep	10	.69	.029	.63	.72	10	.17	.017	.16	.19	DL9311	159
SN	Oct	10	.70	.026	.66	.74	10	.18	.019	.15	.22	DL8608	136
SN	Oct	10	.71	.022	.67	.75	10	.18	.018	.15	.22	DL8906	170
SN	Oct	10	.68	.018	.66	.69	10	.17	.015	.15	.18	DL9110	183
SN	Oct	10	.68	.030	.63	.72	10	.18	.016	.16	.19	AL9211	171
MA off	May	10	.76	.023	.73	.80	10	.23	.007	.22	.23	AL9305	15
MA off	May	10	.77	.015	.76	.80	10	.23	.010	.22	.25	AL9305	25
MA off	Sep	10	.74	.045	.66	.83	10	.19	.018	.18	.24	AL8605	104
MA	Sep	11	.74	.030	.70	.79	11	.19	.015	.17	.22	DL8710	46
MA	Oct	9	.73	.021	.71	.76	9	.22	.010	.20	.23	AL7911	23
MA	Oct	10	.74	.021	.69	.76	10	.20	.014	.18	.22	AL7911	24
MA	Oct	10	.76	.015	.73	.78	10	.23	.006	.22	.24	AL7911	25
MA	Nov	7	.76	.018	.74	.77	7	.19	.009	.18	.20	DL8409	34

* Observations are of late-stage eggs unless noted otherwise.

Unknown #179 Taxon Code: 111 000 179 Sep 22, 1992

Shape and size: Spherical; (.68-.77)

Oil g: Single; (.20 or less)
Egg membrane: Smooth, clear and colorless
Yolk:
Pv space:
Myomeres: Less numerous than in Unk #147, otherwise similar at 5/8~.
Spawning: SNE: May (offshore)
MAB: Feb (south)

Pigmentation and form:

LATE
5/8~: Scatt dend melan on embryo, oil g and yolk; therefore not *Citharichthys/Etropus* spp.

Unknown #179, observed sizes Jul 18, 1989

Summary: (.68-.77), og (.20 or less)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
SN off	May	1	.-	.-	.77	.77	1	.-	.-	<.20	<.20	DL7905	64
MA s	Feb	1	.-	.-	.68	.68	0	.-	.-	.-	.-	AL8002	2

* Observations are of late-stage eggs unless noted otherwise.

Peprilus triacanthus Taxon Code: 170 511 104 Sep 22, 1992

Shape and size: Spherical; .67-.82 (.65-.84)

Oil g: Single; .16-.22 (.15-.25)
Egg membrane: Smooth, clear and colorless
Yolk: Homogeneous
Pv space: Narrow (normal)
Myomeres:
Spawning: GOM: Jun-Aug
GB: May-Sep
SNE: Apr-Sep
MAB: Mar-Aug
SAB: Mar, Apr

Pigmentation and form:

LATE

3/4~: Small stellate or fine dend melan on embryo and oil g. On embryo melan dorsal to dors-lat. On head melan faint; couple scatt on snout, then post generally in neural grooves, tend to form trans bar between mid- and h-brain; then post as darker rows lat to h-brain and beyond as dors-lat rows which tend to converge at approx 3/4 BL and extend to tailtip as a single, sloppy, broad mid-dors row. At approx 1/3 BL 1 or 2 melan on flanks of embryo; and on ventrum, post to anus, there are 1 or 2 ventral melan on approx 50% of embryos. Few prominent melan scatt ant-dors on oil g.

7/8~: Melan essentially same as at 3/4~ with a couple more melan on flanks at mid-body.

Peprilus triacanthus, observed sizes Oct 4, 1994

Summary: .67-.82 (.65-.84), og .16-.22 (.15-.25)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
GB	Aug	15	.72	.018	.67	.74	14	.18	.009	.17	.19	AL8507	362
SN	May	10	.77	.039	.70	.81	10	.22	.013	.19	.23	DL7905	82
SN	May	10	.82	.023	.76	.84	8	.22	.018	.19	.25	DL7905	86
SN off	May	10	.78	.037	.73	.83	10	.21	.007	.20	.22	AL9305	54
SN	Aug	1m,9	.72	.025	.68	.75	10	.17	.012	.15	.19	AL8507	281
SN	Aug	10	.67	.015	.65	.70	10	.16	.012	.15	.18	DL8708	72
SN	Sep	22	.72	.019	.69	.76	22	.18	.010	.16	.20	AL8507	297
MA	May	7	.72	.018	.69	.73	6	.17	.012	.15	.18	DL8003	2
MA in	May	10	.75	.016	.72	.77	10	.19	.010	.18	.20	AL8504	128
MA	Jul	11	.71	.037	.67	.77	11	.20	.012	.18	.22	AL7906	30

* Observations are of late-stage eggs unless noted otherwise.

Unknown #202 Taxon Code: 100 000 202 Sep 23, 1992

["Snout patch"]

Shape and size: Spherical; (.73-.76)

Oil g: Single; (.20)
Egg membrane: Smooth, clear and colorless
Yolk: Homogeneous
Pv space:
Myomeres:
Spawning: MAB: Jul (offshore)

Pigmentation and form:

LATE

7/8~: Dark and slightly dend melan present from snout to tailtip, also on yolk and on oil g, not in finfold. Prominent cluster of melan on snout; a few scatt on head dorsum, a couple lat to m-brain, dors and lat near h-brain (not outlining h-brain as in many species), then extend to anus as scatt dorsally, laterally and vent-lat. Then, extending post to tailtip (mostly dorsal), with a couple lat and a few ventral; ventral melan are mostly on the post 1/5 of body. Near h-gut melan extend towards oil g; scatt darkly over oil g, and a few on yolk near oil g.

Full~: Similar to 7/8~, but now the dorsal series is more lined up; less lateral and less ventral melan than at 7/8~. Only a couple lat on head, very few lat in the abdominal area, but there is a "saddle" at approx 3/4 BL; otherwise pigment strongly dorsal in location; moreover, dors melan from just post to h-brain to approx 2/3 BL forming 2 definite dors-lat rows. Melan on or alongside h-gut, on oil g and a couple on yolk near oil g. Melan patch on snout extends around and beneath ant part of head, producing prominent snout pigment.

Unknown #202, observed sizes Jul 18, 1989

Summary: (.73-.76), og (.20)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
MA off	Jul	1	.-	.-	.76	.76	1	.-	.-	.20	.20	AL8407	111
MA off	Jul	2	.-	.-	.73	.73	1	.-	.-	.20	.20	AL8407	120

* Observations are of late-stage eggs unless noted otherwise.

Unknown #180 Taxon Code: 100 000 180 Sep 22, 1992

[tentative identification: *Micropogonias undulatus*]

Shape and size: Spherical; .73-.81 (.71-.84)

Oil g: Single; .19-.24 (.18-.24)
Egg membrane: Smooth, clear and colorless
Yolk: Homogeneous
Pv space: Narrow (normal)
Myomeres:
Spawning: SNE: Oct
MAB: Jul-Nov

Pigmentation and form:

LATE
ea-Late:
5/8~: Tail twisting, almost flat; oil g ventral. Melan tiny, almost punct (indeed they are punct in the central portion of the body); a few melan on head from ant edge of eyes and post (most along neural grooves) along either side of h-brain and a couple on yolk lat to post 1/2 of h-brain; median dors row from post of h-brain and back to 2/3 BL; only a couple dors melan (post to mid-dors series) on post 1/3 of body; only one ventral melan (on post 1/5 body). Melan on oil g slightly larger; none on yolk except those by h-brain noted above.

3/4~: Dend melan on head along neural grooves, tend to bridge between m- and h-brain; found lat to h-brain then merge to median dors row almost to tailtip. A couple vent melan on post 1/5 body. A couple on yolk close to embryo just post to h-brain, or further out on yolk in a few specimens. Oil g is pigmented. In another sample at 3/4~ additional melan noted scatt lat and a couple ventral melan between anus and tailtip; those post to anus are prominent and seem to be going slightly into the anal finfold; A couple are ant to h-gut.

Unknown #180, observed sizes Jul 18, 1989

Summary: .73-.81 (.71-.84), og .19-.24 (.18-.24)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
MA s	Jul	2	.80	.007	.79	.80	2	.19	.000	.19	.19	EV8006	3
MA s	Oct	10m	.73	.011	.71	.75	10	.19	.011	.18	.21	AL7911	2
MA s	Oct	8	.79	.017	.77	.82	5	.19	.003	.18	.19	AL7911	16
MA	Oct	10	.80	.018	.77	.83	8	.24	.008	.23	.24	AL7911	24
MA	Oct	3	.81	.016	.79	.82	3	.23	.004	.22	.24	AL7911	25
MA	Oct	7m,1	.80	.025	.76	.84	7	.22	.011	.21	.23	AL7911	32

* Observations are of late-stage eggs unless noted otherwise.

Unknown #223 Taxon Code: 100 000 223 Sep 23, 1992

Shape and size:	Spherical; .74 (.72-.76)
Oil g:	Single; .14 (.13-.16), antero-ventral at 7/8~.
Egg membrane:	Single, smooth, clear and colorless
Yolk:	Homogeneous, to finely segmented in part.
Pv space:	Narrow (normal)
Myomeres:	approx 15 or 16 preanus, 17 or 18 post., =32 to 34 total
Spawning:	MAB: Sep SAB: Aug

Pigmentation and form:

LATE

7/8~: Punct melan occur from between eyes in some, or from trans bar at posterior part of m-brain, posteriad as dors-lat series to h-brain and as 2 dors-lat rows to 9/10 BL (like *T. adspersus* but with oil g). No melan ventral on body; none in finfold or on yolk or on oil g.

Unknown #223, observed sizes Jul 19, 1989

Summary: .74 (.72-.76), og .14 (.13-.16)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
SAB	Aug	12	.74	.011	.72	.76	9	.14	.011	.13	.16	DL8507	18

* Observations are of late-stage eggs unless noted otherwise.

Unknown #178 Taxon Code: 100 000 178 Sep 22, 1992

Shape and size: Spherical; .75-.77 (.73-.78)

Oil g: Single; .17-.18 (.15-.19)
Egg membrane: Smooth, clear and colorless
Yolk: Finely segmented, in part; not very noticeable
Pv space: Narrow (normal)
Myomeres: approx 25 to 30 (normal)
Spawning: MAB: Apr, Aug
SAB: Apr

Pigmentation and form:

LATE

7/8~: Melan present on embryo, not on yolk (not sure if on oil g or not, too faded to tell). A couple melan on head, then tend to trans bar between m- and h-brain, outline h-brain, then tend to converge to dors mid-line row back to about 7/8 BL. A couple on or near h-gut; sometimes a couple ventral on post 1/4 of body. [The dorsal midline row is strong and reminiscent of that in *P. dentatus*].

Unknown #178, observed sizes Jul 18, 1989

Summary: .75-.77 (.73-.78), og .17-.18 (.15-.19)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
MA s	Apr	3	.77	.009	.76	.78	3	.18	.004	.18	.18	EV8001	2
SA	Apr	1	.-	.-	.78	.78	1	.-	.-	.14	.14	DL8503	134
SA	Apr	11	.75	.019	.73	.78	11	.17	.010	.15	.19	DL8503	143

* Observations are of late-stage eggs unless noted otherwise.

Cynoscion regalis Taxon Code: 170 200 907 Sep 16, 1992

Shape and size: Spherical; .69-.90 (.63-.94)

Oil g: Single; .18-.24 (.17-.26)
Egg membrane: Smooth, clear and colorless
Yolk: Homogeneous
Pv space: Narrow (normal)
Myomeres:
Spawning: SNE: May-Aug
MAB: Apr-Aug
SAB: Apr (*Cynoscion* sp.)

Pigmentation and form:

Cynoscion regalis, observed sizes Jul 14, 1989

Summary: .69-.90 (.63-.94), og .18-.24 (.17-.26)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
MA	May	18	.82	.032	.76	.89	18	.22	.008	.21	.24	DL8003	2
MA	Jun	6	.83	.030	.79	.87	6	.23	.011	.22	.25	AL7906	23
MA n	Jun	9	.90	.029	.85	.94	9	.23	.009	.22	.24	DL8604	26
MA n	Jun	13	.88	.030	.83	.94	13	.24	.011	.22	.26	DL8604	41
MA	Jun	1	.-	.-	.77	.77	1	.-	.-	.22	.22	DL8604	118
MA	Jun	15	.69	.061	.63	.81	15	.18	.019	.17	.22	DL8604	124
MA	Jul	14	.85	.029	.80	.89	13	.24	.007	.22	.25	AL7906	51

* Observations are of late-stage eggs unless noted otherwise.

Enchelyopus cimbrius Taxon Code: 148 010 201 Oct 4, 1994

Shape and size: Spherical; .76-.88 (.66-.92)

Oil g: Single; .12-.20 (.09-.21)
Egg membrane: Smooth, clear and colorless; often sticky and float
Yolk: Homogeneous
Pv space: Narrow (normal)
Myomeres:
Spawning: GOM: Apr-Nov
GB: Mar-Jan
SNE: Jan-Dec
MAB: Jan, Mar-Jun, Sep

Pigmentation and form:

Enchelyopus cimbrius, observed sizes Oct 4, 1994

Summary: .76-.88 (.66-.92), og .12-.20 (.09-.21)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
GM	May	4	.85	.032	.81	.89	3	.19	.023	.17	.21	DL7905	96
GM w	Jun	4	.86	.022	.83	.88	4	.16	.008	.15	.17	DL8704	212
GM	Jun	9	.84	.018	.81	.87	9	.18	.011	.16	.19	DL8704	221
GM	Sep	7	.69	.015	.66	.70	7	.17	.015	.15	.18	DL8607	157
GM	Sep	10	.76	.046	.70	.85	10	.14	.016	.11	.15	DL8607	160
GM	Sep	7	.80	.015	.77	.81	7	.14	.009	.13	.15	DL8708	175
GM	Oct	10	.77	.028	.72	.81	10	.14	.013	.11	.15	AL8707	222
GM	Oct	10	.78	.020	.76	.82	10	.13	.013	.13	.16	AL9211	279
GM w in	Oct	10	.77	.030	.72	.82	10	.13	.013	.13	.16	DL9311	210
GM w in	Oct	10	.76	.029	.69	.79	10	.13	.000	.13	.13	DL9311	288
GM w	Oct	10	.78	.023	.79	.82	10	.12	.010	.09	.13	DL9311	302
GB	Oct	2	.79	.026	.77	.81	2	.15	.000	.15	.15	DL8608	197
SN	Mar	10	.83	.023	.80	.88	10	.16	.019	.13	.18	DL9004	149
SN	May	6	.83	.039	.78	.89	5	.19	.022	.15	.21	DL7905	50
SN	May	3	.85	.035	.81	.87	3	.16	.008	.15	.17	DL7905	56
SN	May	5	.88	.037	.82	.92	4	.18	.007	.18	.19	DL7905	74
SN	May	11	.82	.033	.73	.85	10	.17	.009	.15	.18	DL7905	81
SN	May	4	.80	.028	.77	.80	4	.17	.014	.16	.19	DL8704	89
SN	May	4	.81	.016	.80	.83	4	.18	.008	.17	.19	DL8704	93
SN	Aug	3	.79	.035	.77	.83	3	.20	.012	.18	.21	BE7901	70
SN	Aug	5	.77	.025	.76	.80	5	.17	.009	.16	.18	AL8507	285
SN	Sep	15	.75	.023	.72	.77	15	.15	.006	.15	.17	DL8507	98
SN	Oct	11	.77	.028	.74	.81	11	.15	.013	.13	.17	DL8608	136

* Observations are of late-stage eggs unless noted otherwise.

Unknown #90 Taxon Code: 100 000 090 Sep 22, 1992

[tentative identification: *Centropristis striata*]

Shape and size:	Spherical; .80-.91 (.77-.95)
Oil g:	Single; .14-.16 (.13-.18); anterior position
Egg membrane:	Smooth, clear and colorless
Yolk:	Homogeneous (although sometimes frothy and opaque (an artifact)
Pv space:	Narrow (normal)
Myomeres:	
Spawning:	SNE: Jun-Oct MAB: Jan, Apr-Oct SAB: Mar, Apr

Pigmentation and form:

MIDDLE

la-Mid: Moderately dendritic melan sparsely scatt on embryo, from over m-brain to 95% BL; scatt (not in rows, and not outlining h-brain); may or may not be 1 melan vent-lat at approx 9/10 BL; none on yolk; oil g ventral; (can't tell if melan are on oil g).

LATE

ea-Late: Same as la-middle, but now from f-brain almost to tailtip. Yolk frothy and quite opaque in some specimens (an artifact).

5/8~, tail twisted: Sparsely scatt dark and punct to dend melan from snout virtually to ttip; scatt dors and dors-lat plus couple vent on post 1/4 body. Yolk frothy and quite opaque in some specimens (an artifact).

3/4~: Sparsely scatt dark dend melan from snout to approx 95% BL; scatt dors and dors-lat on ant 1/2 body then rather confined to dors and vent aspects on post 1/2 body. Now tend to outline forebrain and be in a transverse bar between mid- and h-brain; 1 or 2 dors melan at approx 3/4 BL start going into ffold. None on yolk.

7/8 to full~: Widely scatt dark dend melan on embryo from snout almost to ttip as before but now also into dors and vent ffold, and by full~ dend melan found along distal edges of dors and vent ffold. Also, move into h-gut area, coming to rest near vent; somewhat more visible on oil g; rarely see melan on yolk. Oil g is now anterior.

Unknown #90, observed sizes Jul 13, 1989

Summary: .80-.91 (.77-.95), og .14-.16 (.13-.18)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
SN	Jul	12	.87	.032	.84	.93	8	.15	.006	.14	.16	EV8006	54
MA s off	May	6	.80	.028	.77	.85	6	.16	.010	.15	.17	DL8603	1
MA	May	13	.91	.024	.86	.95	13	.16	.008	.15	.18	AL8504	128
MA n	Jun	2m,6	.87	.050	.81	.94	0	.-	.-	.-	.-	DL8604	26
MA	Jun	1	.-	.-	.89	.89	0	.-	.-	.-	.-	DL8604	118
MA s	Jun	11	.84	.022	.81	.89	11	.16	.010	.15	.17	DL8604	145
MA	Sep	4	.83	.023	.81	.86	4	.15	.011	.14	.16	DL8507	38
MA	Sep	15	.82	.045	.77	.90	15	.14	.009	.13	.15	DL8507	74

* Observations are of late-stage eggs unless noted otherwise.

Unknown #200 Taxon Code: 100 000 200 Sep 23, 1992

["Patch on yolk ventrum"]

Shape and size: Spherical; .79 (.75-.84)

Oil g: Single; .22 (.20-.23)
Egg membrane: Smooth, clear and colorless
Yolk: Homogeneous (or perhaps finely segmented)
Pv space:
Myomeres:
Spawning: MAB: Jul-Sep

Pigmentation and form:

LATE

3/4-7/8~: [5 specimens, melan rather faint on embryo, yolk quite opaque (perhaps the yolk is finely segmented).] Melan on embryo and yolk; can't tell if on oil g (due to opaque yolk); none in finfold. Dend melan from snout to tailtip, scatt on head, lat to h-brain, then widely scatt (sparse) dors and dors-lat on post 1/2 of body. Ventrally there are only a few melan widely scatt between anus and tailtip. Slightly darker melan at tailtip, dorsal in 4, ventral in 1. The most obvious (darkest) melan are in a small patch on the posterior aspect of yolk (near oil g location).

Full~: Melan on embryo and on yolk, none in finfold, can't tell if there are any on oil g or not. On embryo: small slightly dend and dark melan from snout to tailtip. Scatt on snout and head dorsum, lat to h-brain, then scatt on dorsal and lat and ventral aspects of body, most dense on ventrum (as in Haddock), ending in a conspicuous dark splotch at tailtip. A few on yolk alongside abdomen and a prominent tight cluster on posterior-ventral part of yolk, near anus.

Unknown #200, observed sizes Jul 24, 1989

Summary: .79 (.75-.84), og .22 (.20-.23)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
MA s in	Jul	1	.-	.-	.84	.84	1	.-	.-	.20	.20	AL8407	102
MA in	Sep	5	.79	.024	.75	.80	2	.22	.005	.22	.23	AL8605	73

* Observations are of late-stage eggs unless noted otherwise.

Unknown #218 Taxon Code: 100 000 218 Sep 23, 1992

["Melan cluster on oil g"]

Shape and size: Spherical; .82 (.80-.84)

Oil g: Single; .15 (.14-.15)
Egg membrane: Single, smooth, clear and colorless
Yolk: Homogeneous
Pv space: Narrow (normal)
Myomeres:
Spawning: MAB: May (south)
SAB: Jul

Pigmentation and form:

LATE
1/2 to 5/8~: Dark punct melan on embryo and oil g. Perhaps a couple on head but begin in earnest post to eyes, scatt on dors of embryo virtually to tailtip; couple of melan lat-vent on post 1/2 of embryo (barely onto yolk surface). There is a tight cluster of melan on the oil g dors surface.

Unknown #218, observed sizes Jul 19, 1989

Summary: .82 (.80-.84), og .15 (.14-.15)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
MA s off	May	4	.82	.019	.80	.84	4	.15	.004	.14	.15	AL8504	139

* Observations are of late-stage eggs unless noted otherwise.

Unknown #169 Taxon Code: 100 000 169 Sep 22, 1992

Shape and size: Spherical; .82 (.82-.83)

Oil g: Single; (.12)
Egg membrane:
Yolk:
Pv space:
Myomeres: 50+
Spawning: GB: Oct (southern edge)

Pigmentation and form:

LATE
3/4~: No pigmentation.

7/8~: No pigmentation on embryo, yolk or on oil g.

Unknown #169, observed sizes Jul 18, 1989

Summary: .82 (.82-.83), og (.12)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
GB s	Oct	1e,1	.82	.007	.82	.83	0	.-	.-	.-	.-	AL7911	109
GB s	Oct	1	.-	.-	.83	.83	1	.-	.-	.12	.12	AL7911	123

* Observations are of late-stage eggs unless noted otherwise.

Unknown #231 Taxon Code: 100 000 231 Sep 30,1992

Shape and size: Spherical; (.82)

Oil g: Single; (.23)
Egg membrane: Single, smooth, clear and colorless
Yolk: Homogeneous
Pv space: Narrow (normal)
Myomeres: approx 25 (normal)
Spawning: MAB: Jun, Aug

Pigmentation: In general, like a lightly-pigmented *Cynoscion regalis,* but with melanophores on yolk.

Late

3/4~: Melan small, almost punct; present on embryo, oil g, and on yolk, but not into ffold. On embryo melan scatt on snout, between eyes, couple over eyes, tend to be in transverse bar between m- and h-brain, lat to h-brain (a couple over h-brain), then post scatt dors and dors-lat to about mid or 2/3 BL, then tend to be fewer and more dorsal back to 95% BL, also a few (3) ventral on post 1/3 body, few lat in abdominal and mid-body area. Melan on oil g dark and scatt evenly on dorsal 1/2. Melan on yolk punct (hard to see), few (<15 in all) and widely scatt on proximal 1/2 (as in *M. bilinearis*). Oil g posterior.

7/8~: Similar to 3/4~; melan on embryo, oil g, and yolk, but not in ffold. Punct melan scatt dors and dors-lat from snout to approx 1/2 BL (even a couple over h-brain), then post as loose mid-dors row to 95% BL. Ventrally very few; a few in abdominal area to mid-body (anus), then only 1 melan on ventrum, at approx 2/3 BL. None in ffold. On oil g several melan scatt on dors (proximal) 1/2. Approx 20 to 25 melan on yolk, 10 to 12 on either side of embryo near head and abdomen.

Unknown #231, observed sizes Jul 19, 1989

Summary: (.82), og (.23)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
MA n in	Jun	1	.-	.-	.82	.82	1	.-	.-	.23	.23	DL8604	65
MA in	Jun	1	.-	.-	.82	.82	1	.-	.-	.23	.23	DL8604	103

* Observations are of late-stage eggs unless noted otherwise.

Unknown #228 Taxon Code: 100 000 228 Sep 24, 1992

Shape and size: Spherical (almost); .83 (.80-.84)
some slightly oval, some slightly collapsed

Oil g: Single; (<.23, exp)
Egg membrane: Single, smooth, clear and colorless
Yolk: Homogeneous
Pv space: Narrow (normal)
Myomeres:
Spawning: MAB: Jan (central, offshore)

Pigmentation and form:

MIDDLE

ea- to mid-Mid: Melan small and dark; occur on embryo and yolk (possibly on oil g, not sure due to rupture condition of these oil g's). Melan scatt on head, generally along neural grooves; a couple lat, post to eyes; tend to be in dors-lat rows over h-brain with a couple scatt directly dorsally; then post tending to be in 2 dors-lat rows to approx 9/10 BL; a few vent-lat melan on post 1/2 body. A few on yolk, which tend to be lat to post 1/2 body and near oil g. A relatively narrow embryo.

Unknown #228, observed sizes Jul 19, 1989

Summary: .83 (.80-.84), og (<.23, exp)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
MA c off	Jan	10m	.83	.012	.80	.84	10	.-	.-	<.23	<.23	DL8601	46

* Observations are of late-stage eggs unless noted otherwise.

Unknown #237 Taxon Code: 100 000 237 Sep 30, 1992

Shape and size: Spherical; (.84)

Oil g: Single; (.20)
Egg membrane: Single, smooth, clear and colorless
Yolk: Segmented (I think -- based on 1 specimen, yolk partially opaque and broken up.)
Pv space: Narrow (normal)
Myomeres: 18 pre + 42 post = 60 total
Spawning: MAB: Aug (south)

Pigmentation and form:

LATE
full~: Anus at approx 50% BL. Melan large, dark and few; symmetrically paired on head -- 1 pr on snout, 1 pr between eyes, 1 pr dors-lat on mid-brain, 2 or 3 pr lat to h-brain. Then, on middle 1/2 of body, as single dorsal row of large melan, few in number, which seem to be slightly entering the dorsal finfold. None on post 1/5 of body; none on ventrum of body. There is a single small patch (or 1 large melan) on yolk ventrum, near oil g. A couple of minute melan are beneath the head. None seen on the oil g (but hard to see, due to yolk opacity).

Unknown #237, observed sizes Oct 5, 1989

Summary: (.84), og (.20)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
MA s off	Aug	1	.-	.-	.84	.84	1	.-	.-	.20	.20	DL8708	2

* Observations are of late-stage eggs unless noted otherwise.

Hippoglossina oblonga Taxon Code: 183 012 301 Oct 4, 1994

Shape and size:	Spherical; .84-1.03 (.79-1.08)
Oil g:	Single; .14-.17 (.11-.20)
Egg membrane:	Single, smooth, clear and colorless.
Yolk:	Homogeneous
Pv space:	Narrow (normal)
Myomeres:	
Spawning:	GOM: Jun-Sep GB: May-Oct SNE: May-Nov MAB: Apr-Nov

Pigmentation and form:

MIDDLE

mid-Mid: No pigment on embryo or on yolk.

la-Mid: At about the start of this substage there are a few minute melan scatt on the dorsum of the abdominal area and a few scatt on the yolk near the abdominal area of the embryo.
[In comparison, *S. aquosus* has much more pigment than *H. oblonga* at this stage.]

LATE

ea-Late: Melan punct to stell, dark but small. A few scatt on head (to snout in some, or to just ant to eyes in others) then post as broad swath of evenly scatt melan, first lacking at tailtip but then becoming present to tailtip. A few lat melan, first only in pect area and at mid-body, then lat also on post 1/4 body. Many melan scatt on ant-dors half of yolk, then also a few in vicinity of oil g which migrate onto oil g by approx 5/8~.

5/8~: Tail twisted and flexed; finfold beginning (less than 1/2 BD at any point); 39 myomeres. Melan on embryo and yolk (and possibly on oil g). Melan on embryo punct; present from snout to tailtop; widely scatt over dorsum of head (including eyes and h-brain), then slightly more densely scatt dors and dors-lat to approx 3/4 BL (including a few lat near mid-body), then more restricted to dorsum (only a couple lat) on post 1/4 of body. On yolk, punct melan scatt mostly on ant-dors half of yolk; only a few elsewhere and most of these are close to the oil g, perhaps migrating onto the oil g. Oil g is post, near tailtip. Oil g is pale yellow; melan may or may not be directly on it as yet.

3/4~: Melan small, dark and punct. Finfold not yet pigmented. Melan from snout to tailtip; on head, scatt all over (even on eyes, mid-and h-brain); posteriad scatt on dorsum (only a few lat in pect area) becoming more restricted to a mid-dors row farther post; only a few lat on post 1/3 of body; ventrally there is a row of melan on post 1/4 of body (post to anus). On yolk several punct to stell melan scatt on dors 1/3 (concentrated near head and abdomen). A few scatt on oil g.
[Narrower head and melan more punct than in *S. aquosus*.]

Full~: Same in all respects as at 3/4~ but now with broad finfold which is pigmented. Dors and anal finfolds with patches of melan at about 3/4 BL [not rows as in *S. aquosus*].
[Head narrower in *H. oblonga* then in *S. aquosus*.]

Summary: .84-1.03 (.79-1.08), og .14-.17 (.11-.20)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
SN	Jul	20	.92	.031	.88	.99	20	.16	.011	.15	.18	AL7906	57
SN	Jul	10	.94	.015	.92	.96	10	.15	.009	.15	.17	DL8604	174
SN	Jul	10	.93	.020	.90	.96	10	.17	.014	.15	.18	DL8604	177
SN	Aug	5m,6	.93	.030	.88	.96	11	.17	.011	.15	.19	AL8507	265
SN	Aug	4	.96	.034	.93	1.00	4	.17	.002	.17	.17	AL8507	298
SN	Aug	11	.92	.012	.90	.94	11	.14	.007	.13	.15	DL8607	82
SN	Aug	10	.91	.033	.89	.98	10	.16	.020	.13	.18	DL8708	70
MA	May	10	.94	.035	.88	.99	10	.15	.015	.11	.17	DL7905	3
MA n	May	17	.97	.021	.93	1.01	11	.17	.014	.15	.20	AL8504	86
MA off	May	5	1.03	.033	.99	1.08	5	.17	.013	.15	.19	AL9305	34
MA s	Jun	3	.84	.046	.79	.89	3	.15	.000	.15	.15	DL8604	145
MA	Jul	23	.90	.029	.85	.97	23	.14	.010	.11	.16	AL8507	181
MA	Aug	6	.93	.016	.90	.95	5	.15	.009	.14	.16	BE7901	24

* Observations are of late-stage eggs unless noted otherwise.

Merluccius bilinearis Taxon Code: 148 041 403 Feb 18, 1994

Shape and size:	Spherical; .86-.97 (.80-1.03, to 1.13)
Oil g:	Single; yellow; .23 - .28 (.22-.31)
Egg membrane:	Smooth, clear, colorless; usually sticky and float
Yolk:	Homogeneous
Myomeres:	Approx 55
Pv space:	Narrow
Spawning:	GOM: May-Nov GB: Mar-Jan SNE: Jan-Dec MAB: Jan-Dec SAB: Apr

Pigmentation and form:

EARLY

epiboly 3/4: no pigment.

epib 8/10-9/10: few, tiny and faint melan in two rows at mid-body (in neural grooves), hard to see; few widely scatt on yolk; none (yet) visible on oil g.

MIDDLE

ea-Mid: Numerous punct melan dors-lat on middle 1/3 of body; couple lat to h-brain; few scatt on yolk (dors 1/2). Oil g post to vent-post.

mid-Mid: Melan now larger, fewer and slightly stell, now on oil g. Melan on embryo most numerous dors-lat on middle 1/3 of body but also extend forward to eyes and back virtually to ttip. Additionally there may be a couple lat on head (on eyes) and lat near ttip. Those on yolk are more clustered near head and abdominal area of embryo.

LATE:

ea-Late: Oil g post. Melan small, dark and somewhat stell; on embryo, yolk and oil g. Dors-lat rows of melan from eyes to 9/10 BL, darkest on middle 1/3 body, additionally a few melan in mid-dors row at mid-body; on yolk a few melan beneath and alongside head, also tight alongside at 8/10 to 9/10 BL; a few melan scatt on dors 1/2 yolk, and scatt on oil g.

Just twisted, 5/8-11/16~: Viewed from dors, prominent dors-lat rows from snout to mid-body, then scatt dors and lat; a few lat on abdominal area; a couple melan starting to migrate into dors ffold. On yolk and oil g as before.

3/4~: Same prominent dors-lat rows of dark stellate melan from snout to mid-body (slightly beyond in some), then fewer post as mid-dors series; about half have tendency to have band between mid- and h-brain; on post 1/3 body many (to most) melan migrating into dors and anal ffold. Most embryos with a ventral cluster at about 8/10 to 9/10 BL (near oil g). Melan on yolk fewer now but dark and in loose patches on dors 1/2 yolk, lat to head and abdomen. A few melan scatt on oil g.

7/8~: Dark stell melan in two dors rows from snout then back lat to brain and lat to about mid-body where they stop. Mid-dors series begin post to h-brain then extend into dors ffold where form either a loose series to about 8/10 or 9/10 BL in most, or somewhat clustered in dors ffold origin and at

about 7/10 to 9/10 BL (with corresponding cluster in anal ffold) in a few, or (rarely) almost lacking in ffold. Melan on yolk and oil g as before.

LATE:

full~: Dark stell to dend melan on embryo, ffold, yolk and oil g. From snout back as two dors rows in neural grooves on head then lat to h-brain and lat to about mid-body near anus. In dors ffold typically 3 clusters (near origin, just past anus and at about 3/4 BL) or in 2 clusters with 1st and 2nd of the above-3 loosely joined. In anal ffold in cluster at 3/4 BL and a couple melan scatt anteriad. A few on embryo body dors and vent at the ffold clusters noted. Widely scatt on yolk, on dors 1/2, near head and abdomen. A few on oil g.

Outstanding are the two dors rows on head becoming lat on abdomen and the ffold melan, especially the clusters at 3/4 BL.

Merluccius bilinearis, observed sizes Oct 4, 1994

Summary: egg diameter .86-.97 (.80-1.03; one abnormally large egg 1.13) oil globule .23-.28 (.22-.31)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
GM	Sep	10	.86	.026	.81	.89	10	.23	.010	.22	.24	DL8607	160
GM	Oct	10	.89	.026	.83	.92	10	.25	.010	.24	.26	AL8707	222
GB off	Apr	10	.94	.039	.88	1.01	10	.26	.010	.25	.28	AL9304	220
GB	Jul	10	.90	.015	.89	.92	10	.25	.009	.24	.26	DL8604	322
GB	Aug	10	.92	.087	.84	1.13	10	.26	.013	.24	.29	AL8407	435
GB	Aug	10	.92	.028	.89	.96	10	.25	.025	.22	.30	AL8705	512
GB	Sep	10	.89	.026	.85	.94	10	.23	.013	.22	.26	DL8507	136
GB	Sep	10	.88	.035	.81	.94	10	.24	.014	.22	.26	DL8607	121
GB	Oct	10	.88	.028	.83	.92	10	.24	.015	.22	.26	DL8608	193
GB	Oct	10	.87	.047	.84	.95	10	.24	.017	.22	.26	DL8906	202
GB	Oct	10	.86	.034	.80	.91	10	.24	.015	.22	.26	DL9011	185
GB	Nov	10	.88	.027	.84	.93	10	.23	.017	.22	.26	DL9012	68
SN	May	10	.97	.035	.91	1.03	10	.26	.009	.25	.28	DL7905	87
SN off	May	10	.93	.022	.90	.96	10	.25	.007	.25	.26	AL9305	54
SN	Jun	12	.93	.023	.88	.96	11	.28	.017	.24	.31	DL8003	75
SN	Jun	10	.95	.022	.92	.98	10	.28	.017	.25	.31	DL8003	84
SN	Aug	4m,7	.90	.036	.83	.95	11	.26	.024	.23	.30	AL8507	281
SN	Aug	1m,6	.87	.027	.84	.92	7	.24	.014	.22	.26	AL8507	292
SN	Aug	19	.93	.026	.88	.99	19	.25	.011	.23	.26	AL8507	298
SN	Sep	10	.90	.032	.85	.94	10	.25	.013	.22	.26	DL8607	102
SN	Sep	10	.89	.025	.87	.94	10	.26	.000	.26	.26	DL8708	93
SN	Sep	10	.88	.027	.84	.91	10	.23	.015	.22	.26	DL9110	162
SN	Oct	10	.90	.029	.85	.92	10	.24	.016	.22	.26	AL8605	207
SN	Oct	10	.87	.031	.84	.95	10	.24	.022	.22	.29	DL9011	217
MA s off	May	10	.92	.022	.90	.96	10	.25	.018	.22	.28	AL9305	6

* Observations are of late-stage eggs unless noted otherwise.

Unknown #67 Taxon Code: 100 000 067 Sep 17, 1992

Shape and size: Spherical; 0.87 - 0.93 (.83-.97)

Oil g: Single; 0.22-0.26 (.21-.27)
Egg membrane: Smooth, clear and colorless
Yolk: Homogeneous
Pv space: Narrow (normal)
Myomeres: Approx 45; definitely more than *P.saltatrix*
Spawning: SNE: Jun-Aug
MAB: May-Aug

Pigmentation and form:

LATE

ea-Late: Punct melan from post to eyes, lat to m-brain (in neural grooves), tend to be in trans band between m- and h-brain, then post as 2 lat and dors-lat rows lat to h-brain and post to tail tip as neat and distinct rows of punct melan. On post 1/4 body there may or may not be 1 or 2 vent-lat melan (precursor to vent series under tail tip later). Couple melan lat on pect area and couple on oil g.

5/8~, twisted: Punct melan as above with a couple more melan lat on pect area and mid-body; and, as tail lengthens, the melan on post 1/4 body appear relatively more spread out but still in 2 dors-lat rows plus a couple vent-lat on post 1/10 body. Couple melan on oil g.

3/4~: Melan on embryo and oil g (rarely on yolk) [less often on yolk than in *P.saltatrix]*. Melan punct [smaller than on *P.saltatrix*]. On embryo only as far forward as between eyes, in neural grooves [none anterior to eyes as in *P.saltatrix*], some tend to trans band between m- and h-brain, post as 2 rows lat to h-brain and further post as 2 dors-lat rows to between 3/4 and 9/10+ BL (melan sparse on post 1/4 body but still in 2 loose dors-lat to lat rows). Noticeable aggregation of melan at 9/10 BL which may consist of dors-lat, lat or vent-lat melan; a precursor to the ventral row seen later in development. Virtually none ventral on embryo except in this aggregation at 9/10 BL [unlike *P.saltatrix* which has more ventral melan further forward, to approx mid-body from tail tip].

7/8 - full~: Melan small, fine and stell [smaller and finer than on *P.saltatrix*]. Usually scatt on head, some embryos with melan oriented in neural grooves; may tend to be in trans band between m- and h-brain; then post as 2 precise lat rows by h-brain and 2 distinct dors-lat rows on tail which may tend to be lat on post 1/4 body [much more precise than on *P.saltatrix*]; dors-lat melan may be relatively sparse near tail tip. At about 9/10 BL to tail tip there is an aggregation of melan ventrally which becomes a definite row with development. Few vent melan ant to this aggregation in most (although to h-gut in some); only rarely on h-gut [unlike *P.saltatrix* which has melan here] and only rarely ant to anus ventrally.

Unknown #67, observed sizes Sep 5, 1990

Summary: .87-.93 (.83-.97), og .22-.26 (.21-.27)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
MA	Jun	1	.-	.-	.92	.92	0	.-	.-	.-	.-	DL8604	113
MA s	Jul	5	.91	.040	.85	.96	4	.26	.018	.23	.27	DL8406	188
MA	Jul	20	.93	.021	.88	.97	19	.25	.009	.23	.26	AL8507	144
MA	Jul	7	.91	.011	.89	.92	7	.24	.008	.23	.25	AL8507	156
MA	Jul	7	.88	.032	.83	.92	7	.23	.008	.22	.25	AL8507	177
MA	Aug	8	.89	.015	.87	.92	8	.22	.009	.21	.23	BE7901	6
MA	Aug	8	.87	.015	.85	.89	8	.23	.007	.22	.24	BE7901	24
MA	Aug	9	.90	.017	.89	.92	9	.23	.009	.22	.24	DL8708	20

* Observations are of late-stage eggs unless noted otherwise.

Pomatomus saltatrix Taxon Code: 170 080 101 Sep 16, 1992

Shape and size: Spherical; 0.87 - 0.97 (.83-1.09) decrease in size late in season

Oil g:	Single; 0.22 - 0.29 (.19-.30)
Egg membrane:	Smooth, clear and colorless
Yolk:	Homogeneous
Myomeres:	26
Pv space:	Narrow (normal)
Spawning:	SNE: Jul and Aug
	MAB: May-Aug
	SAB: Apr

Pigmentation and form:

MIDDLE

ea- to mid-Mid, just pigmented: Tiny melan; a couple just post to eyes and many melan forming sloppy dors-lat to lat rows on middle 1/3 body. Few scatt on dors 1/2 yolk.

mid-Mid: Small melan scatt dors, dors-lat and lat on middle 1/3 body, extending ant and post generally in neural grooves; already a few vent-lat on post 1/2 body. There may or may not be a couple scatt on yolk and a couple on oil g.

LATE

ea-Late: Dark, stell melan; on embryo dors from between or ant to eyes (perhaps only one or two melan here at start of this stage) then post virtually to tail tip as two dors-lat rows, these rows may be sloppy [unlike precise rows in Unk #67] with additional melan dors, lat and vent-lat; even some onto yolk along central 1/2 embryo. Few melan scatt on oil g.

3/4~: Melan on embryo, oil g and couple on yolk. Melan on embryo dors, from snout virtually to ttip; dark, slightly stell melan; a few in neural grooves on head then lat to m- and h-brain, post as 2 distinct dors-lat rows to about 3/4 BL and then post as sparse scatt dors-lat and vent-lat melan. Couple lat in pect area, couple tight alongside embryo on yolk in pect area; a few scatt lat and vent-lat on post 1/4 body. Dark melan ventrally (where embryo joins yolk, where h-gut forming) and 3 or 4 ant to this point, on 3rd 1/4 of body. A few scatt dors and ant on oil g.

[Compared to Unk #67: *P. saltatrix* has melan onto snout, Unk #67 lacks melan ant to eyes; melan tend to be larger and darker in *P. saltatrix* than in Unk #67 (like *T. onitis* compared to *T. adspersus* in both these respects); *P. saltatrix* more likely than Unk #67 to have melan onto yolk near pect area; ventral melan on post 1/4 body more scatt than on Unk #67, (those on Unk #67 in this area tend to be aggregated near tail tip) also occur further forward on ventrum of *P. saltatrix* than on Unk #67, forward to approx mid-body on *P. saltatrix.*]

Late, 7/8 - full~: Melan on embryo, oil g and minor amount on yolk; on embryo it is usually dark and blotchy [as compared to Unk #67 which has punct or fine dend melan]. Prominent blotchy dark melan on dorsum; anteriorly in 2 dors and dors-lat rows of dark and sparse melan from snout to merge to a single mid-dors series at about 1/2 BL and extending back from post to h-brain to just short of tail tip. Ventrally, similar dark and sparse melan scatt post to anus [but not in a compact row near tail tip as seen on Unk #67], prominent melan just above anus, on dors-post aspect of h-gut [Unk #67 only rarely have this, and it is not prominent], and up to 3

or 4 ventral melan ant to anus, although most have none here. Scatt melan on oil g [more than on Unk #67]. Couple melan on yolk beneath head or tight alongside head and abdomen.

Pomatomus saltatrix, observed sizes May 18, 1990

Summary: .87-.97 (.83-1.09) og .22-.29 (.19-.30)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
SN	Jul	4	.92	.014	.91	.94	4	.24	.007	.23	.25	AL8507	9
SN	Jul	13	.95	.028	.89	.99	11	.24	.007	.23	.25	DL8406	40
SN	Jul	11	.95	.026	.91	.99	10	.26	.009	.24	.27	DL8406	261
SN	Jul	10	.96	.028	.92	1.01	10	.26	.010	.24	.28	DL8604	183
SN	Jul	10	.97	.049	.92	1.09	10	.25	.009	.24	.26	DL8604	235
MA	Jul	11	.97	.030	.93	1.02	-	.29	.012	.27	.30	AL7906	52
MA	Jul	14	.93	.036	.88	1.01	13	.25	.018	.23	.29	AL8507	156
MA n	Jul	5	.94	.019	.91	.96	5	.24	.009	.23	.25	AL8507	199
MA	Jul	11	.95	.015	.92	.96	11	.27	.014	.25	.30	DL8406	50
MA off	Jul	4	.90	.040	.84	.93	3	.23	.011	.23	.25	DL8406	204
MA	Jul	10	.96	.033	.92	1.01	10	.25	.009	.24	.26	AL8705	30
MA s	Aug	12	.87	.024	.83	.91	12	.22	.013	.19	.23	DL8507	26

* Observations are of late-stage eggs unless noted otherwise.

Unknown #236 Taxon Code: 100 000 236 Sep 30, 1992

Shape and size:	Spherical; .89-.91 (.87-.94)
Oil g:	Single; .23 (.21-.25)
Egg membrane:	Single, smooth, clear and colorless
Yolk:	Homogeneous
Pv space:	Narrow (normal)
Myomeres:	12 or 13 pre + 31 post = 43 or 44 total
Spawning:	MAB: Aug, Sep
Pigmentation and form:	[This type, in early and middle stages, will be difficult (or impossible) to distinguish from Unk #67 or *P. saltatrix*.]

MIDDLE

ea-Mid: No pigmentation yet.

mid-Mid: A couple of melan present on dorsum of mid-body.

LATE

ea-Late: Punct dark melan in neural grooves from between eyes to 95% BL; regular series on ant 1/2, interrupted rows on post 1/2. A couple between rows between m- and h-brain; 1 or 2 vent-lat at 95% BL; zero to 2 on yolk, close to pect area; dark, prominent cluster on oil g dorsum. Oil g is ventral in position (becoming post, later).

5/8~, twisting: Punct dark melan from snout virtually to tailtip; 2 dors-lat rows on head in neural grooves; 1 or 2 between m- and h-brain; lat rows by h-brain; then posteriad scatt dors, dors-lat, lat, and vent-lat to approx 3/4 BL; on post 1/4 scatt in all areas but less dense than anteriad; some in pect or abdominal area spreading down and onto the yolk -- now a few (2-4) either side of embryo on yolk, close to embryo with occasional melan out onto yolk (like *M. bilinearis*). Prominent dark melan in cluster on dorsum of oil g.

5/8~, twisted: 35+ myomeres. Pigment same as above but now tends to have a couple more melan on yolk; couple more on snout (spreading laterally from neural groove as well as in groove); tendency for melan to be in 2 dors-lat rows over middle 1/2 embryo, with additional others lateral.

13/16-7/8~: 43 or 44 myomeres; anus at approx 55% BL. Punct melan from snout virtually to tailtip; a few on yolk; prominent on oil g; none in finfold. Melan in neural grooves on head plus a couple lat before eyes; slight tendency to be between m- and h-brain; neat rows lat to h-brain plus couple others lat; post as scatt punct melan -- tend to be more dorsal pre-anus, and ventral post-anus -- but others scatt on all areas (dors, lat and vent). Seven or 8 punct melan either side of pect area on yolk (same location as *M. bilinearis*). Dark loose cluster of melan on oil g persists. Oil g is post.

[Location, myomere count, large oil g, indicate this might be *Scomberomorus* sp.]

Unknown #236, observed sizes Oct 5, 1989

Summary: .89-.91 (.87-.94), og .23 (.21-.25)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
MA s off	Aug	13	.91	.021	.87	.94	11	.23	.012	.21	.25	DL8708	1
MA s off	Aug	2	.89	.022	.88	.91	1	.-	.-	.25	.25	DL8708	2

* Observations are of late-stage eggs unless noted otherwise.

Unknown #230 Taxon Code: 100 000 230 Sep 24, 1992

Shape and size: Spherical; (.90)

Oil g: Single; (.19), post at 5/8~
Egg membrane: Single, smooth, clear and colorless
Yolk: Homogeneous
Pv space: Narrow (normal
Myomeres: approx 25 to 30 (normal)
Spawning: MAB: Nov (south)

Pigmentation and form:

LATE
5/8~, tail twisted and flexed: Finfold developed. No pigmentation.

Unknown #230, observed sizes Jul 19, 1989

Summary: (.90), og (.19)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
MA s	Nov	1	.-	.-	.90	.90	1	.-	.-	.19	.19	DL8510	2

* Observations are of late-stage eggs unless noted otherwise.

Unknown #234 Taxon Code: 100 000 234 Sep 30, 1992

Shape and size: Spherical (almost); (.91-.93)

Oil g: Single; (.15)
Egg membrane: Single, smooth, clear and colorless
Yolk: Homogeneous
Pv space: Narrow (normal)
Myomeres: count approx 20+ (pre), and 25 (post), total = 50+
Spawning: MAB: Nov, south (Cape Hatteras)

Pigmentation and form:

LATE
3/4~: Anus at 3/4 BL; relatively long h-gut (and broad anal finfold). Melan punct, tiny few and faint; on embryo a few scatt on dors of h-brain and abdomen; a couple lat at mid-body; a couple in anal finfold at 95% BL; a couple melan on oil g; none on yolk.

Unknown #234, observed sizes Aug 4, 1989

Summary: (.91-.93), og (.15)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
MA s off	Nov	1	.-	.-	.91	.93	1	.-	.-	.15	.15	DL8510	3

* Observations are of late-stage eggs unless noted otherwise.

Unknown #152 Taxon Code: 100 000 152 Jul 13, 1989

Shape and size: Spherical; (.92-.96)

Oil g: Single; (.23)
Egg membrane:
Yolk:
Pv space:
Myomeres:
Spawning: MAB: Feb (Cape Hatteras)

Pigmentation and form:

LATE
ea-Late, 1/2~: Slender embryo. Dend melan on embryo and oil g, none on yolk. On embryo widely scatt melan on dorsum from h-brain (none on "head") back virtually to ttip (approx 95% BL); a couple on lat near mid-body. I think there are a few on the oil g but hard to tell due to condition.

Unknown #152, observed sizes

Summary: (.92-.96), og (.23)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
MA s	Feb	3	.-	.-	.92	.96	-	.-	.-	.23	.23	AL8002	2

* Observations are of late-stage eggs unless noted otherwise.

Stenotomus chrysops Taxon Code: 170 213 404 Sep 17,1992

Shape and size: Spherical; .92-.97 (.89-1.02)

Oil g: Single; .18-.23 (.18-.25)
Egg membrane: Smooth, clear, colorless
Yolk: Homogenous
Pv space: Narrow (normal)
Myomeres:
Spawning: SNE: Jun-Jul
MAB: May-Aug

Pigmentation and form:

Stenotomus chrysops, observed sizes Sep 17, 1992

Summary: .92-.97 (.89-1.02), og .18-.23 (.18-.25)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
SN	Jun	1	.-	.-	.95	.95	1	.-	.-	.23	.23	DL8003	75
SN	Jul	3	.97	.028	.94	.99	3	.23	.012	.21	.24	AL7906	75
SN	Jul	3	.92	.000	.92	.92	3	.21	.008	.21	.22	AL7906	77
SN in	Jul	1m	.	.	1.02	1.02	1	.	.	.25	.25	AL8507	5
MA s off	May	1	.-	.-	.92	.92	1	.-	.-	.18	.18	DL8603	2
MA	May	4	.93	.038	.89	.98	4	.18	.000	.18	.18	DL8407	26

* Observations are of late-stage eggs unless noted otherwise.

Unknown #147 Taxon Code: 100 000 147 Sep 22, 1992

Shape and size: Spherical; .92-.93 (.89-.96)

Oil g: Single; .25-.26 (.22-.27)
Egg membrane:
Yolk:
Pv space:
Myomeres: 57 to 60
Spawning: GB: Oct
SNE: Oct
MAB: Jun-Aug, Nov

Pigmentation and form:

LATE
5/8~: Oil g anterior; 1 melan on oil g; 2 melan widely separated on yolk. None on head, trans bar of melan between mid and h-brain; 2 dors-lat rows either side of h-brain, rows meet dorsally, single mid-dors row goes almost to ttip. A few (4) melan in anal ffold.

Unknown #147, observed sizes Sep 22, 1992

Summary: .92-.93 (.89-.96), og .25-.26 (.22-.26)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
MA s	Jun	5	.93	.030	.89	.96	5	.25	.017	.22	.26	DL8604	140
MA s	Jul	6	.-	.-	.89	.92	-	.-	.-	.22	.24	EV8006	2
MA	Aug	8m,9	.92	.024	.89	.96	8	.26	.015	.24	.27	AL8604	203

* Observations are of late-stage eggs unless noted otherwise.

Scophthalmus aquosus Taxon Code: 183 030 101 Sep 17, 1992

Shape and size:	Spherical; .96-1.20 (.92-1.29)
Oil g:	Single; .16-.22 (.14-.23)
Egg membrane:	Single, smooth, clear and colorless
Yolk:	Homogeneous
Pv space:	Narrow (normal)
Myomeres:	
Spawning:	GOM: May-Oct GB: Apr-Nov SNE: Mar-Nov MAB: Feb-Nov SAB: Mar-Apr

Pigmentation and form:

EARLY
Epiboly 9/10+, (95%): No pigment.

MIDDLE
ea-Mid: At the beginning of this substage there are many small, stell, and faint melan scatt on the dorsum from between the eyes post to approx 1/2 or 2/3 BL. None on yolk at beginning of this substage. By the end of this substage melan are darker, more numerous and extend to the tailtip and beyond, onto the yolk near the oil g; and a couple of melan are lat to the embryo.

mid-Mid: Numerous small, almost punct or stell melan scatt from snout to tailtip on dors and dors-lat surfaces of embryo. There are a couple melan on yolk alongside of the embryo and a few on yolk by tailtip and on oil g.

la-Mid: Stellate melan are thickly scatt on dors and dors-lat aspects of embryo, snout to tailtip, heaviest over central 2/3 to 3/4 of body, **not** void over h-brain. There are a couple melan on yolk surface tight alongside embryo at mid-body; and a few are present on yolk between tailtip and oil g (migrating to oil g?); a couple are scatt on oil g.
[Much more pigment than in *H. oblonga* at this stage].

LATE
ea-Late: Numerous small, punct or slightly stell melan scatt on dors, dors-lat and lat surfaces of embryo from snout to tailtip (relatively few at tailtip). As ea-late substage there are only a couple of melan tight alongside of embryo on yolk and a few near the oil g on yolk and on the oil g. As the tail twists and flexes more melan migrate onto the yolk surface near the pect area and spread out slightly in this area.

3/4~: Small dend melan (stell?) all over -- snout to tailtip; over eyes, over h-brain (small void near the center of the h-brain), present on dors, lat and vent surfaces of body; beginning to migrate into dors finfold, a couple are along h-gut; scatt on dors 1/2 of yolk; and scatt on oil g.

7/8 to full~: Melan vary from punct in some to more dend, light and "filmy" in many. Melan widely scatt (but largely absent on eyes now) on dors, lat and vent surfaces of anterior 1/2 of body, from snout posteriad, to and including h-gut; whereas on post 1/2 of body melan are widely scatt but tend to

be oriented on dors and vent edges of body. Longitudinal patches of melan are present in dors and anal finfolds about 1/2-way between anus and tailtip, or at about 3/4 BL. There are a few widely scatt melan on the yolk; and a few on the oil g.

Scophthalmus aquosus, observed sizes Feb 18, 1994

Summary: .96-1.20 (.90-1.29), og .16-.22 (.14-.23)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
GB	May	10	1.20	.040	1.15	1.24	5	.20	.017	.18	.22	DL7905	115
GB	Aug	3m,8	1.03	.037	.96	1.09	11	.18	.011	.16	.20	AL8507	333
GB	Aug	12	1.07	.024	1.04	1.10	10	.17	.013	.15	.19	AL8507	372
GB	Aug	15	1.09	.027	1.06	1.16	15	.18	.012	.15	.20	AL8507	416
GB	Sep	11	1.05	.041	.98	1.11	11	.17	.013	.15	.18	DL8607	120
GB	Sep	10	1.11	.036	1.03	1.16	10	.16	.016	.15	.18	DL8708	116
GB	Oct	10	1.04	.030	.98	1.08	10	.16	.009	.15	.16	DL9011	241
GB	Nov	10	1.07	.029	1.04	1.13	10	.16	.016	.15	.18	DL9012	73
SN	May	7	1.13	.045	1.06	1.18	5	.18	.029	.15	.23	DL7905	49
SN	May	6	1.17	.030	1.13	1.20	4	.22	.011	.21	.23	DL7905	50
SN w	May	64	1.04	.034	.99	1.13	54	.18	.014	.14	.20	AL8504	86
SN	Aug	6	.96	.039	.92	1.02	6	.17	.026	.15	.21	BE7901	68
SN	Sep	12	1.03	.063	.90	1.11	12	.18	.015	.17	.22	DL8708	92
MA	Apr	3m,9	1.11	.040	1.05	1.18	12	.19	.008	.18	.20	DL8503	102
MA	Apr	12	1.11	.047	1.01	1.19	12	.19	.011	.17	.21	DL8503	104
MA	Oct	1m	.-	.-	1.29	1.29	1	.-	.-	.20	.20	DL8508	114
MA	Nov	7	1.07	.031	1.03	1.11	7	.17	.009	.17	.18	DL8409	17
MA	Nov	5	1.06	.031	1.03	1.11	5	.17	.015	.15	.18	DL8409	18
MA	Nov	10	1.03	.051	.96	1.11	10	.16	.006	.15	.17	DL8409	25
MA n	Nov	10	1.06	.023	1.03	1.11	10	.17	.010	.15	.18	DL8409	53

* Observations are of late-stage eggs unless noted otherwise.

Unknown #226 Taxon Code: 100 000 226 Sep 24, 1992

Shape and size: Spherical; (.97)

Oil g: Single; (.22), post at 9/10~
Egg membrane: Single, smooth, clear and colorless
Yolk: Homogeneous
Pv space: Narrow (normal)
Myomeres: approx 25 to 30 (normal)
Spawning: MAB: Jan (south)

Pigmentation and form:

LATE
9/10~: Melan tiny and punct; relatively few present. Melan present on embryo and on oil g, not in finfold or on yolk. Approx 10 melan scatt on dors of head (between eyes and over f- and m-brain), 1 or 2 on either side, lat to h-brain, then approx 15 melan scatt dors-lat (and a couple lat) from mid-body to 9/10 BL, with a tendency for most of these to be near mid-body. A few scatt on ant 1/2 oil g.

Unknown #226, observed sizes Jul 19, 1989

Summary: (.97), og (.22)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
MA s	Jan	1	.-	.-	.97	.97	1	.-	.-	.22	.22	DL8601	2

* Observations are of late-stage eggs unless noted otherwise.

Paralichthys dentatus Taxon Code: 183012403 Sep 16, 1992

Shape and size: Spherical; .97-1.02 (.92-1.07)

Oil g: Single; .19-.23 (.17-.24)
Egg membrane: Smooth, clear and colorless
Yolk: Homogeneous
Pv space: Narrow (normal)
Myomeres:
Spawning: GB: Jan, Oct, Nov
SNE: Sep-Dec
MAB: Jan, Mar-May, Sep-Nov

Pigmentation and form:

Paralichthys dentatus, observed sizes Jul 17, 1989

Summary: .97-1.02 (.92-1.07), og .19-.23 (.17-.24)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
SN	Nov	13	1.00	.030	.94	1.05	13	.22	.011	.20	.24	WI7903	25
SN	Nov	7	.98	.026	.94	1.01	6	.21	.012	.20	.23	WI7903	30
SN NYB	Nov	10	.99	.033	.92	1.03	10	.20	.017	.18	.22	DL8409	50
SN e	Nov	6	1.00	.043	.96	1.07	6	.19	.018	.17	.22	DL8409	91
SN	Nov	10	.97	.030	.92	1.01	10	.19	.013	.18	.22	DL8510	87
MA s	Nov	5	1.02	.025	1.00	1.05	5	.23	.010	.22	.24	DL8409	15

* Observations are of late-stage eggs unless noted otherwise.

Unknown #215 Taxon Code: 100 000 215 Sep 23, 1992

"Big snout splotch" (see Unk #202)

Shape and size: Spherical; (1.00)

Oil g: Single; (.25), ventral at 5/8~
Egg membrane: Single, smooth, clear and colorless
Yolk: Homogeneous
Pv space: Narrow (normal)
Myomeres: approx 45 to 50, (25 postanus)
Spawning: SAB: Apr (offshore)

Pigmentation and form:

LATE

5/8~,tail twisted: Melan dark and contracted (but not punct), found on embryo and on oil g, virtually none on yolk. On embryo melan cluster on snout ant to eyes (on dors, ant and vent surfaces); then a gap, then dors and lat behind eyes, then lat to h-brain, densely scatt on dors of abdomen behind h-brain, then post as 2 thick, dark, and almost converging dors rows; extend to 9/10 BL. Occur on ventrum of abdomen and back to 9/10 BL; scatt on oil g. A couple on yolk near the oil g.

3/4~: Virtually same as at 5/8~, except some of the ventral melan post to the anus are now somewhat clustered into a blotch 1/2 way between anus and tailtip and not merely in a row as before.

Unknown #215, observed sizes Sep 23, 1992

Summary: (1.00-1.03), og (.25-.27)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
SA n off	Apr	1	.-	.-	1.00	1.00	1	.-	.-	.25	.25	DL8503	137
SA n off	Apr	1	.	.	1.03	1.03	1	.	.	.27	.27	DL8503	138

* Observations are of late-stage eggs unless noted otherwise.

Unknown #216 Taxon Code: 100 000 216 Jul 19, 1989
[tentative identification: *Paralichthys* sp.]

Shape and size: Spherical; 1.01 (.98-1.05)

Oil g: Single; .22 (.21-.26)
Egg membrane: Single, smooth, clear and colorless
Yolk: Homogeneous
Pv space: Narrow (normal)
Myomeres:
Spawning: MAB: Jan, Mar, Aug
SAB: Mar

Pigmentation and form:

LATE
5/8~, just twisting: Dark and somewhat dend melan sparsely scatt dors and dors-lat from snout to tailtip. A couple on yolk and on oil g.

3/4~: Finfold forming nicely. Melan dark and dend, now noticeably lined up along bases of dors and anal finfolds and some starting to move into finfold; several on yolk. When viewed from above there is a striking mid-dors row flanked by lat rows; melan scatt over head and abdomen.

7/8 to full~: Melan into finfolds; dark, dend and sparse in finfold, on embryo and on oil g.

Unknown #216, observed sizes Jul 19, 1989

Summary: 1.01 (.98-1.05), og .22 (.21-.26)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
MA s	Jan	1	.-	.-	1.05	1.05	1	.-	.-	.26	.26	DL8601	4
MA s	Mar	8	1.01	.023	.98	1.05	8	.22	.015	.21	.23	AL8502	69

* Observations are of late-stage eggs unless noted otherwise.

Unknown #184 Taxon Code: 100 000 184 Sep 23, 1992

Shape and size:	Spherical; (1.07-1.10)
Oil g:	Single; (.15-.21)
Egg membrane:	Smooth, clear and colorless
Yolk:	Homogeneous
Pv space:	
Myomeres:	"numerous"
Spawning:	MAB: May (south, offshore) SAB: Apr

Pigmentation and form:

LATE
3/4~: 2 or 3 tiny punct melan on dorsum of tailtip and a small cluster of punct melan on ventrum of tailtip.

7/8~: The only pigmentation present is a small cluster of melan ventral to tailtip.

Unknown #184, observed sizes Jul 18, 1989

Summary: (1.07-1.10), og (.15-.21)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
MA s	May	1	.-	.-	1.10	1.10	1	.-	.-	.15	.15	DL8003	3
SA	Apr	1	.-	.-	1.07	1.07	1	.-	.-	.21	.21	DL8503	136

* Observations are of late-stage eggs unless noted otherwise.

Merluccius albidus Taxon Code: 148041401 Oct 4, 1994

Shape and size: Spherical; 1.06-1.11 (.99-1.21)

Oil g: Single; .31-.37 (.28-.38)
Egg membrane: Smooth, clear and colorless; often sticky and float
Yolk: Homogeneous
Pv space: Narrow (normal)
Myomeres:
Spawning: GOM: May, Oct, Dec
GB: Jan-Dec
SNE: Jan-Dec
MAB: Feb-Dec

Pigmentation and form:

Merluccius albidus, observed sizes Oct 4, 1994

Summary: 1.06-1.11 (.99-1.21), og .31-.37 (.28-.38)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
GB	Aug	10	1.11	.023	1.07	1.15	10	.34	.014	.32	.37	YU7702	96
GB	Aug	11	1.11	.050	1.00	1.21	10	.37	.018	.33	.38	YU7702	100
SN	Apr	10	1.10	.034	1.07	1.15	10	.32	.021	.28	.35	DL8503	55
SN	Apr	15	1.07	.026	1.03	1.10	15	.33	.012	.30	.34	DL8503	56
SN off	Apr	11	1.07	.017	1.04	1.10	9	.31	.025	.28	.34	AL8701	170
SN off	Dec	10	1.06	.053	.99	1.14	10	.32	.022	.29	.36	DL9214	16
MA	Apr	10	1.09	.016	1.07	1.11	10	.35	.016	.33	.37	AA8704	91

* Observations are of late-stage eggs unless noted otherwise.

Unknown #156 Taxon Code: 100 000 156 Sep 22, 1992

Shape and size:	Spherical; 1.08 (1.08-1.11)
Oil g:	Single; .23 (.23)
Egg membrane:	Smooth, clear and colorless
Yolk:	Homogeneous
Pv space:	Narrow (normal)
Myomeres:	10 or 11 + 21 = 31 or 32
Spawning:	MAB: Mar (off Chesapeake Bay, shelf edge) SAB: Apr (midshelf between Cape Hatteras and Cape Lookout)

Pigmentation and form:

LATE

3/4 to 7/8~: Melan are punct, small and dark and relatively sparse. A couple scatt on dorsum of head, a couple over h-brain, (no transverse bar), a couple lat to h-brain, then a few scatt dorsally to approx 3/4 BL; a couple on ventrum post-anus; a couple on dorsum of oil g; none on yolk, none in finfold.

Unknown #156, observed sizes Jul 17, 1989

Summary: 1.08 (1.08-1.11), og .23 (.23)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
MA s off	Mar	2e	.-	.-	1.11	1.11	-	.-	.-	<.31	<.31	DL8102	4
SA	Apr	2	1.08	.007	1.08	1.09	2	.23	.000	.23	.23	DL8503	142

* Observations are of late-stage eggs unless noted otherwise.

Scomber scombrus Taxon Code: 170 440 604 Oct 4, 1994

Shape and size: Spherical; 1.12-1.27 (1.07-1.35)

Oil g: Single; .29-.33 (.25-.35)
Egg membrane: Single, smooth, clear and colorless
Yolk: Homogeneous
Pv space: Narrow (normal)
Myomeres:
Spawning: GOM: May-Aug
GB: May-Aug
SNE: Apr-Aug
MAB: Apr-Jun, Aug

Pigmentation and form:

Scomber scombrus, observed sizes Oct 4, 1994

Summary: 1.12-1.27 (1.07-1.35), og .29-.33 (.25-.35)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
SN	May	10	1.21	.037	1.18	1.31	10	.31	.009	.30	.32	DL7905	66
SN	May	12	1.19	.041	1.13	1.26	11	.30	.011	.28	.31	DL7905	67
SN	May	10	1.21	.025	1.17	1.24	10	.31	.008	.29	.32	DL7905	69
SN	May	11m,3	1.27	.044	1.22	1.33	14	.33	.015	.29	.35	DL8704	88
SN	May	10	1.20	.032	1.14	1.24	10	.31	.008	.30	.32	DL8704	169
SN	May	7	1.19	.047	1.16	1.30	7	.30	.010	.28	.30	DL8704	178
SN off	May	10	1.17	.053	1.08	1.27	10	.31	.023	.26	.32	AL9305	54
SN	Jun	12	1.14	.033	1.08	1.20	12	.31	.013	.29	.34	DL8003	75
SN	Jun	10	1.12	.041	1.07	1.19	-	.29	.-	.25	.31	DL8003	84
MA	May	10	1.18	.026	1.14	1.22	10	.31	.015	.30	.33	DL8603	44
MA	May	10	1.23	.059	1.14	1.35	10	.32	.016	.30	.33	DL8603	57

* Observations are of late-stage eggs unless noted otherwise.

Rachycentron canadum Taxon Code: 170 100 101 Sep 17, 1992
[formerly Unk #189]

Shape and size: Spherical; 1.23 (1.18-1.27)

Oil g: Single; .32 (.27-.34)
Egg membrane: Smooth, clear and colorless
Yolk: Homogeneous
Pv space: Narrow (normal)
Myomeres: ND
Spawning: MAB: Jun, Jul (south)

Pigmentation and form:

LATE
9/16-5/8~, tail twisting: Densely scatt melan on snout and ant to eyes; noticeable gap in pigm to transverse bar between mid- and h-brain extending laterally. Melan lat to, and sparse over, h-brain. On body; dark melan densely scatt dorsally, dors-lat and vent-lat, back to 90-95% BL. Laterally very few except in pect area and at about 8/10 to 9/10 BL where melan occur in loose patches. Several melan on oil g (mostly dorsal), none on yolk or in ffold (just forming).

Rachycentron canadum, observed sizes Sep 17, 1992

Summary: 1.23 (1.18-1.27), og .32 (.27-.34)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
MA s mid	Jun	1	.-	.-	1.20	1.20	1	.-	.-	.34	.34	DL8604	152
MA in	Jun	1m	.-	.-	1.16	1.16	1	.-	.-	.33	.33	DL8604	83
MA s off	Jul	1m	.-	.-	1.25	1.25	1	.-	.-	.31	.31	EV8006	1
MA s	Jul	8	.-	.-	1.18	1.27	-	.-	.-	.27	.27	EV8006	2
MA s	Jul	2	1.23	.010	1.22	1.24	2	.32	.030	.30	.34	AL8507	142
MA	Jul	1	.	.	1.26	1.26	1	.	.	.30	.30	AL8507	143

* Observations are of late-stage eggs unless noted otherwise.

Sarda sarda Taxon Code: 170 440 701 Mar 31, 1993

Shape and size: Spherical; 1.19-1.26 (1.18-1.37)

Oil g: Multiple; [or perhaps single, and almost always broken]
no. per egg; (2-10) diameter;(max=.27)
Egg membrane: Single, smooth, clear and colorless.
Yolk: Homogeneous
Pv space: Narrow (normal)
Myomeres:
Spawning: SNE: Jun-Aug
MAB: May-Aug

Pigmentation and form:

LATE

[Tiny, punct and sparse melan.]

Sarda sarda, observed sizes Mar 31, 1993

Summary: egg diameter: 1.19-1.26 (1.18-1.37)
oil globule number per egg: (2-10)
oil globule diam: (max=.27)

		Egg diameter					Oil globule no.					Oil globule diam						
Area	Mon	Obs[1]	Mean	SD	Min	Max	Obs[2]	Mean	SD	Min	Max	Obs[3]	Mean	SD	Min	Max	Cruise	Sta
SN	Jul	20	1.26	.030	1.21	1.30	-	.-	.-	2	10	0	.-	.-	.-	.-	AL7906	57
SN	Aug	4	1.19	.012	1.18	1.20	0	.-	.-	-	-	-	.-	.-	.-	.27	AL8507	218
MA	May	1	.-	.-	1.37	1.37	0	.-	.-	-	-	0	.-	.-	.-	.-	DL8003	1

[1]Refers to number of late-stage eggs unless noted otherwise.
[2]Refers to number of eggs in which oil globules were counted.
[3]Refers to number of oil globules measured, in 1 or more eggs.

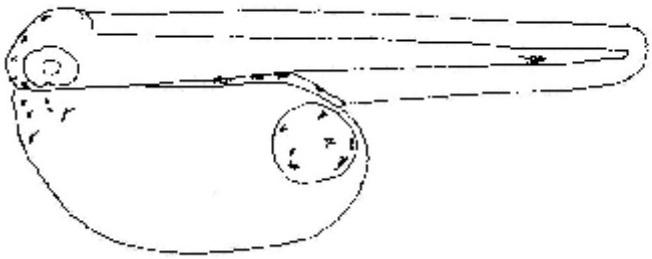
Unknown #225 Taxon Code: 100 000 225 Mar 3, 1992

Shape and size: Spherical; (1.20)

Oil g: Single; (.29)
Egg membrane: Single, smooth, clear and colorless
Yolk: Homogeneous
Pv space: Narrow (normal)
Myomeres: Numerous, approx 75 to 80 (approx 20 + 55 to 60)
Spawning: MAB: Mar (south, offshore)

Pigmentation and form:

LATE
15/16~: Punct to slightly stell dark melan on embryo, yolk and oil g. Six prominent melan scatt on snout, 1 on dors of head between eyes. A few melan scatt along dorsum of m- and h-gut. Prominent pair of large and dendritic vent-lat melan at approx 7/8 BL. A few melan in loose cluster on yolk beneath head, and a few scatt on oil g.



Unknown #225
Late, 15/16~
Myomeres numerous, approx 75 to 80
(20 + 55 to 60)

Unknown #225, observed sizes Jul 19, 1989

Summary: (1.20), og (.29)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
MA s off	Mar	1	.-	.-	1.20	1.20	1	.-	.-	.29	.29	AL8602	71

* Observations are of late-stage eggs unless noted otherwise.

Brosme brosme Taxon Code: 148 010 701 Feb 4, 1994

Shape and size: Spherical; 1.28-1.31 (1.15-1.46)

Oil g: Single; 0.26-0.28 (0.24-0.30)
Egg membrane: Fine pores visible
Yolk:
Pv space:
Myomeres:
Spawning: GOM: Apr-Nov
GB: Apr-Oct
SNE: Apr-Aug
MAB: Mar-Jun, Sep, Nov

Pigmentation and form:

Brosme brosme, observed sizes Feb 4, 1994

Summary: 1.28-1.31 (1.15-1.46), og .26-.28 (.24-.30)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
GM	May	10	1.28	.080	1.15	1.39	10	.26	.015	.24	.30	DL7905	140
GM e	Jun	1	.-	.-	1.27	1.27	1	.-	.-	.26	.26	DL8603	189
GM	Jul	11	1.31	.044	1.22	1.37	11	.28	.011	.27	.30	AL7906	122
GB w	Oct	1	.-	.-	1.46	1.46	1	.-	.-	.26	.26	DL8906	191
MA	Apr	1	.-	.-	1.29	1.29	1	.-	.-	.26	.26	AA8704	29

* Observations are of late-stage eggs unless noted otherwise.

Lopholatilus chamaeleonticeps Taxon Code: 170 070 201 Sep 16, 1992

Shape and size:	Spherical; 1.28-1.39 (1.28-1.41)
Oil g:	Single; .19-.21 (.17-.24)
Egg membrane:	Smooth, clear and colorless
Yolk:	Homogeneous
Pv space:	Narrow (normal)
Myomeres:	
Spawning:	GB: Apr-Jun, Aug-Oct SNE: Mar-Oct MAB: Apr-Sep, Nov

Pigmentation and form:

Lopholatilus chamaeleonticeps, observed sizes Jul 17, 1989

Summary: 1.28-1.39 (1.28-1.41), og .19-.21 (.17-.24)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
SN	Aug	2	1.28	.003	1.28	1.28	2	.20	.011	.19	.21	AL8507	291
SN	Sep	2	1.30	.008	1.29	1.30	2	.19	.022	.17	.20	AL8507	297
SN	Oct	2	1.34	.042	1.31	1.37	2	.20	.042	.17	.23	AL7911	108
MA	Jun	2e,2	1.39	.013	1.37	1.41	4	.21	.022	.18	.24	AL7906	6

* Observations are of late-stage eggs unless noted otherwise.

Unknown #148 Taxon Code: 100 000 148 Jul 13, 1989

Shape and size: (approx 1.34+, no chorion on this specimen)

Oil g: Single; (.46)
Egg membrane:
Yolk: Homogeneous
Pv space:
Myomeres: (low 30's)
Spawning: GOM: Apr (western GOM)

Pigmentation and form:

LATE
1 1/8~: Oil g post; no pigm except on eyes.

Unknown #148, observed sizes

Summary: (approx 1.34), og (.46)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
GM w	Apr	1	.-	.-	1.34	1.34	1	.-	.-	.46	.46	AL7903	21

* Observations are of late-stage eggs unless noted otherwise.

Unknown #232 Taxon Code: 100 000 232 Sep 30, 1992

Shape and size: Spherical; (1.42)

Oil g: Single; (.30)
Egg membrane: Single, smooth, clear and with a copper tint.
Yolk: Partially segmented?
Pv space: Narrow (normal)
Myomeres: Rough count 35 (20+15)
Spawning: MAB: Jun (south)

Pigmentation and form:

Late
1 1/8~: Anus at approx 60% BL. Finfold broad; both dorsal and anal ffolds greater in depth than body depth. Melan present on embryo, yolk and oil g, but not in ffolds. On head, melan in 2 dors-lat rows from snout back to include h-brain, with a few scatt between and lat. From h-brain to anus melan scatt over entire body (dors, lat and ventral), as well as on h-gut. Post to anus most melan restricted to double rows both dorsally and ventrally which extend to about 95% BL. None in ffolds. On yolk faint dend melan scatt on dors 2/3 (large patches near head and abdomen), but not on ventral 1/3. Oil g with several scatt melan.

Unknown #232, observed sizes Jul 19, 1989

Summary: (1.42), og (.30)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
MA so	Jun	1	.-	.-	1.42	1.42	1	.-	.-	.30	.30	DL8604	145

* Observations are of late-stage eggs unless noted otherwise.

Lophius americanus Taxon Code: 195 010 202 Sep 16, 1992

Shape and size:

Oil g:
Egg membrane:
Yolk:
Pv space:
Myomeres:
Spawning: GOM: Jun, Sep
GB: May
SNE: Mar, Jun, Sep, Oct
MAB: May

Pigmentation and form:

Lophius americanus, observed sizes Jul 17, 1989

Summary: outer diam, deciduous, irreg: (1.60-1.90)
inner diam, irreg: (1.43-1.70)
oil globule diam: (.42-.50)

		Outer diam					Inner diam					Oil globule diam						
Area	Mon	Obs[1]	Mean	SD	Min	Max	Obs	Mean	SD	Min	Max	Obs[3]	Mean	SD	Min	Max	Cruise	Sta
SN w off	Mar	0	.-	.-	.-	.-	1	.-	.-	1.60	1.70	1	.-	.-	.45	.50	AL8502	135
SN w	May	1m	.-	.-	1.6	1.90	1	.-	.-	1.55	1.60	1	.-	.-	.42	.42	DL8704	158
SN w	May	1m	.-	.-	1.64	1.64	1	.-	.-	1.43	1.54	1	.-	.-	.45	.45	DL8704	162

* Observations are of late-stage eggs unless noted otherwise.

Brevoortia tyrannus Taxon Code: 121 050 304 Sep 16, 1992

Shape and size:

Oil g:
Egg membrane:
Yolk:
Pv space:
Myomeres:
Spawning: GOM: Jun
SNE: May-Jul, Sep-Nov
MAB: Jan, Apr, Aug-Nov

Pigmentation and form:

Brevoortia tyrannus, observed sizes Jul 19, 1989

Summary: 1.45-1.64 (1.44-1.81), og .15-.16 (.14-.18)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
GM	Jun	9	1.62	.117	1.47	1.81	6	.16	.014	.14	.18	DL8003	93
SN	Nov	5	1.64	.096	1.51	1.73	4	.16	.018	.15	.18	DL8409	82
MA n	Oct	2	1.45	.013	1.44	1.46	2	.15	.000	.15	.15	DL8608	129

* Observations are of late-stage eggs unless noted otherwise.

Uranoscopidae Taxon Code: 170 340 000 Sep 17, 1992
[tentative identification: *Astroscopus guttatus*]

Shape and size:	Spherical, 1.47-1.59 (1.40-1.69)
Oil g:	Single; .27-.33 (.22-.35)
Egg membrane:	Finely sculpted, single, clear and colorless
Yolk:	Homogeneous
Pv space:	Narrow (normal)
Myomeres:	
Spawning:	MAB: Apr-Oct SAB: Apr and Aug

Pigmentation and form:

MIDDLE

mid-Mid, 3/8-4/10~: A thick-bodied embryo; oil g post to tailtip. Numerous dark, punct melan widespread on embryo with a few on oil g and on yolk near oil g. Melan on dorsum from snout to tailtip, most numerous and widespread from head and post to about 2/3 BL -- rather like *S. aquosus* pigmentation at this stage. On head 1 or 2 melan on snout, with most occurring from between eyes and posteriad. Melan spreading lat at mid-body and on posterior area, and on yolk surface near tailtip and oil g.

LATE

45%~, twisting: Stubby embryo (late stage at <1/2~); oil g post. Melan dark and compact (punct to stellate), rarely dendritic. Melan found on embryo and oil g; none on yolk or in finfold. On embryo, present from snout to about 95% BL; a few scatt on snout and between eyes; tend to surround mid-brain lobes; then lat to ant 1/2 h-brain and lat and dors over post 1/2 h-brain and converging to a bold mid-dors series by end of h-brain and extending post to 90% BL, where ends abruptly. Also, melan occur lat and dors-lat on middle 1/3 of body, and vent-lat on body post to h-brain, extending to 90% BL. Several melan on and streaming towards (on h-gut?) oil g.

5/8~, twisted and flexed: Thick-bodied embryo; post oil g; finfold approx 1/2-2/3 BD (just post to anus). General appearance of bold, dark, blotchy to dend melan from snout back to, and stopping abruptly at, 9/10 BL. Melan widespread over head, but not over eyes, tend to surround h-brain, then posteriad as dark and blotchy, dors and vent-lat series, with a few lat at mid-body and a couple along h-gut. A few dark melan present on oil g; none in finfold; and only rarely on yolk (near oil g and beneath head).

3/4-7/8~: Stout embryo; very large head; post oil g; well developed finfold (>BD, post anus); anus at about mid-body. Melan on embryo as before -- large, dark and blotchy to dendritic, occurring from snout and posteriad to an abrupt end at 7/8 BL. Melan on body are generally lat on ant 1/2 of body, and dors and vent on post 1/2. Melan present on h-gut, on oil g and may be a couple on yolk near oil g, otherwise yolk is immaculate.

Summary: 1.47-1.59 (1.40-1.69), og .27-.33 (.22-.35)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
MA	May	1	.-	.-	1.57	1.57	1	.-	.-	.27	.27	DL8003	3
MA	Jun	5	1.59	.070	1.48	1.66	0	.-	.-	.-	.-	DL8604	152
MA	Jul	1	.-	.-	1.50	1.50	1	.-	.-	.24	.24	EV8006	2
MA s	Jul	10	1.58	.060	1.50	1.69	8	.33	.017	.30	.35	AL8407	100
MA s	Aug	2	1.50	.014	1.49	1.51	2	.26	.000	.26	.26	DL8507	21
MA s	Aug	1m,1	1.47	.027	1.46	1.49	1	.-	.-	.27	.27	DL8708	2
MA s	Aug	6m,5	1.57	.054	1.46	1.66	8	.27	.022	.23	.30	DL8708	10
MA s	Sep	1	.-	.-	1.40	1.40	1	.-	.-	.28	.28	AL8605	32
MA	Sep	1	.-	.-	1.48	1.48	1	.-	.-	.22	.22	AL8605	63
MA	Sep	1	.-	.-	1.51	1.51	1	.-	.-	.22	.22	AL8605	78
MA	Oct	8	1.51	.046	1.44	1.56	7	.27	.014	.24	.28	AL7911	23

* Observations are of late-stage eggs unless noted otherwise.

Unknown #205 Taxon Code: 100 000 205 Sep 23, 1992

Shape and size: Spherical; 1.48 (1.45-1.53)

Oil g: Single; (.10-.12)
Egg membrane: Sculpted, hexagonal pattern (very low relief sculpting) irregular hexagons approx .05 across; surface appears orange-peel like at first glance.
Yolk: Homogeneous
Pv space:
Myomeres:
Spawning: MAB: Feb (offshore)

Pigmentation and form:

[No information on this yet.]

Unknown #205, observed sizes Jul 19, 1989

Summary: 1.48 (1.45-1.53), og (.10-.12)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
MA off	Feb	4e	1.48	.035	1.45	1.53	-	.-	.-	.10	.12	AL8502	13

* Observations are of late-stage eggs unless noted otherwise.

Unknown #204 Taxon Code: 100 000 204 Sep 23, 1992

Shape and size: Spherical; (1.50)

Oil g: Single; (.38)
Egg membrane: Smooth, clear and colorless
Yolk: Homogeneous
Pv space:
Myomeres: Numerous, 70 to 80+
Spawning: MAB: Feb, Nov

Pigmentation and form:

LATE
3/4+~: Melan on embryo, in finfold, on yolk, and on oil g. Melan generally very dend and moderately light, but conspicuous in two areas:

1) A thin but dark mid-dors line at mid-body extending over approx 1/10 of body length.
2) On snout and on head between eyes; tend to be in neural grooves and over m-brain, then lat to h-brain.

Also, post to h-gut there is a light ventral series of melan back to 9/10 BL, a couple in the ventral finfold at 95% BL and a light mid-dors series at 9/10 BL. There are a very few dend melan on yolk lat to and close to the head and abdomen. There are a few filmy, dend melan on oil g.

Unknown #204, observed sizes Jul 18, 1989

Summary: (1.50), og (.38)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
MA s off	Nov	1	.-	.-	1.50	1.50	1	.-	.-	.38	.38	DL8409	6

* Observations are of late-stage eggs unless noted otherwise.

Unknown #203 Taxon Code: 100 000 203 Sep 23, 1992

["3 pair of blotches"]

Shape and size: Spherical; 1.52-1.67 (1.48-1.68)

Oil g: Single; .37-.41 (.35-.41)
Egg membrane: Smooth, clear and colorless or with a copper tint
Yolk: Homogeneous
Pv space:
Myomeres: "very numerous"
Spawning: MAB: Jun, Aug-Nov

Pigmentation and form:

LATE
5/8~, twisted and flexed: Slender embryo, narrow head. Melan prominent in three areas:

1) Paired blotches lateral on head between m- and h-brain.
2) Paired blotches vent-lat on abdomen just post to h-brain, where body narrows, these are longitudinal blotches.
3) Paired blotches vent-lat at approx 9/10 BL.

Also, a few dend melan on oil g, and a couple punct melan on yolk (1 under snout and a couple widely scatt).

7/8~: Pigment same as at 5/8~.

Unknown #203, observed sizes Sep 23, 1992

Summary: 1.52-1.67 (1.48-1.68), og .37-.41 (.35-.41)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
MA s off	Aug	2	1.52	.065	1.48	1.57	2	.37	.003	.37	.37	DL8607	9
MA s	Sep	2	1.67	.013	1.66	1.68	2	.41	.000	.41	.41	AL8605	32
MA s off	Sep	2	1.57	.071	1.52	1.62	1	.-	.-	.35	.35	DL8409	2
MA s off	Sep	1m	.-	.-	1.62	1.62	1	.-	.-	.40	.40	AL8707	19
MA s off	Oct	1	.-	.-	1.66	1.66	1	.-	.-	.41	.41	DL8508	3

* Observations are of late-stage eggs unless noted otherwise.

Unknown #209 Taxon Code: 100 000 209 Sep 23, 1992

Shape and size: Spherical; (1.78)

Oil g: Single; (.10)
Egg membrane: Smooth, clear and colorless
Yolk: Homogeneous
Pv space:
Myomeres: "normal"
Spawning: SAB: Mar

Pigmentation and form:

MIDDLE
mid-Mid: No pigmentation.

Unknown #209, observed sizes Jul 19, 1989

Summary: (1.78), og (.10)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
MA s	Mar	1m	.-	.-	1.78	1.78	1	.-	.-	.10	.10	AL8502	26

* Observations are of late-stage eggs unless noted otherwise.

Unknown #224 Taxon Code: 100 000 224 Sep 23, 1992

[compare with Unk #206]

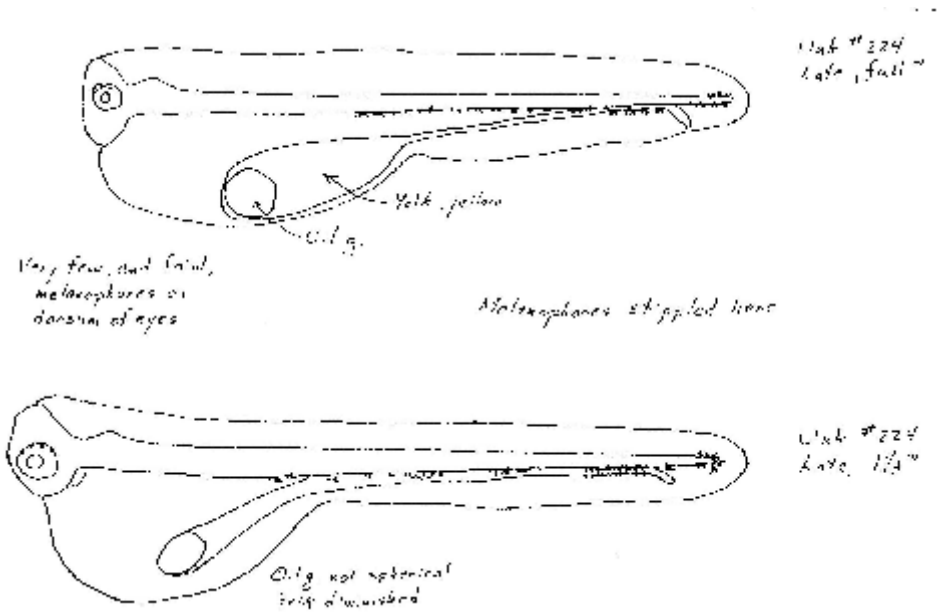
Shape and size:	Spherical; 2.22 (1.96-2.29)
Oil g:	Single; .31 (.30-.32)
Egg membrane:	Single, smooth, clear and colorless
Yolk:	Appears finely segmented as ea-Late, becoming homogeneous
Pv space:	Wide
Myomeres:	Numerous (100+ ?)
Spawning:	MAB: Jul-Sep (south)

Pigmentation and form:

LATE

5/8~: No pigmentation. Oil g is spherical, and ventral in location.

Full~ to 1 1/3~: See illustrations below; compare with Unk #206.



Unknown #224, observed sizes May 22, 1990

Summary: 2.22 (1.96-2.29), og .31 (.30-.32)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
MA s	Jul	4	2.22	.050	2.19	2.29	3	.31	.011	.30	.32	AL8507	137
MA s off	Sep	1	.-	.-	1.96	1.96	1	.-	.-	.30	.30	AL8707	19

* Observations are of late-stage eggs unless noted otherwise.

Ophichthus cruentifer Taxon Code: 143 150 501 Sep 16, 1992

Shape and size: Spherical; 2.30-2.63 (2.10-2.81)

Oil g: Single; .30-.42 (.26-.55)
Egg membrane: Smooth, clear and colorless
Yolk: Segmented
Pv space: Wide
Myomeres: Numerous; 142-162 (Fahay 1983)
Spawning: GB: Jun-Sep
SNE: May-Oct
MAB: Jan-Nov

Pigmentation and form: No pigmentation

Ophichthus cruentifer, observed sizes Jul 13, 1989

Summary: 2.30-2.63 (2.10-2.81), og .30-.42 (.26-.55)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
SN off	Jul	10	2.63	.088	2.51	2.77	10	.42	.085	.30	.55	DL8604	230
SN	Sep	9m,1	2.60	.178	2.19	2.81	10	.38	.016	.36	.41	AL8507	297
MA s	Sep	5	2.30	.113	2.10	2.40	3	.30	.037	.26	.33	AL8605	32
MA	Aug	4	2.49	.023	2.47	2.52	3	.34	.038	.31	.38	BE7901	24

* Observations are of late-stage eggs unless noted otherwise.

Unknown #206 Taxon Code: 100 000 206 Sep 23, 1992

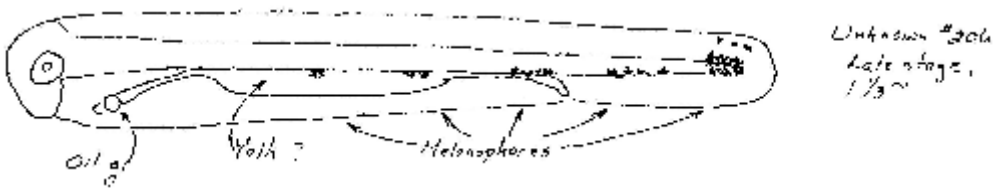
[Anguilliformes]

Shape and size:	Spherical; 2.79-2.93 (2.74-2.95)
Oil g:	Single; .21-.25 (.19-.30)
Egg membrane:	Smooth, clear and colorless
Yolk:	Segmented in early's, not so obvious in lates.
Pv space:	Wide
Myomeres:	Total approx 125, (65 preanus, 60 post)
Spawning:	MAB: Feb
	SAB: Mar, Apr

Pigmentation and form:

LATE

1 1/3~: Melanophores above gut and on ventrum of tail as illustrated.



Oil g is ant-ventral in least pigmented of the 3 specimens examined here, becoming mid-vent in later 2 specimens, which have slightly less yolk also. The oil g appears to be in an anterior extension of the yolk.

Unknown #206, observed sizes Jul 19, 1989

Summary: 2.79-2.93 (2.74-2.95), og .21-.25 (.19-.30)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
MA	Feb	2	2.79	.070	2.74	2.84	3	.21	.012	.19	.22	AL8502	23
SA	Mar	2e	2.93	.028	2.91	2.95	-	.-	.-	.23	.23	AL8502	31
SA	Apr	3m,3	2.86	.064	2.80	2.95	4	.25	.044	.20	.30	DL8503	142

* Observations are of late-stage eggs unless noted otherwise.

Argentina silus Taxon Code: 121 110 105 Feb 4, 1994

Shape and size: Spherical; 3.27-3.35 (3.01-3.47)

Oil g: Single; (1.06-1.29)
Egg membrane:
Yolk:
Pv space:
Myomeres:
Spawning: GOM: Mar to May (Northeast Channel)

Pigmentation and form:

Argentina silus, observed sizes Feb 4, 1994

Summary: 3.27-3.35 (3.01-3.47), og (1.06-1.29)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
GM e	Mar	1e	.-	.-	3.21	3.21	1	.-	.-	1.20	1.20	AL8802	219
GM e	Mar	1e	.-	.-	3.05	3.05	1	.-	.-	1.06	1.06	AL8802	220
GM e	Apr	2e	3.35	.170	3.23	3.47	1	.-	.-	1.29	1.29	AL8602	269
GM e	Apr	9e	3.27	.121	3.01	3.40	0	.-	.-	.-	.-	AL8003	8
GM e	May	1e	.-	.-	3.36	3.36	1	.-	.-	1.21	1.21	DL8102	367

* Observations are of late-stage eggs unless noted otherwise.

Single Oil Globule "Odd Types" (listed by size) Oct 5, 1994

Measurements for egg chorion and oil globule diameters were made to the nearest 0.01 millimeter. Sizes within parentheses represent minimum and maximum values observed.

Unk #187: (.50), og (.10); sculpted; (Myctophidae?).

Unk #199: .68-.76 (.65-.79), inner .60 (.60-.61), og (.20-.23), Double membrane, sculpted, outer memb deciduous.

Unk #140: (.74), og (.21), segmented yolk, pustules on chorion, melan on embryo, oil g and yolk.

Unk #223: .74 (.72-.76), og .14 (.13-.16); yolk homogeneous to finely segmented (in part), pigm as in *T. adspersus* but with oil g.

Unk #178: .75-.77 (.73-.78), og .17-.18 (.15-.19); yolk finely segmented (in part), pigm mostly dorsal, reminiscent of *P. dentatus*.

Unk #219: (.78), inner (.70), og (.21); double membrane, no pigment at 5/8~.

Unk #208: .78-.79 (.78-.80), og .18-.22 (.18-.23); segmented yolk.

Unk #221: (.82), og "small"; yolk strongly segmented.

Unk #210: .82 (.78-.85), og .15 (.15-.17); yolk strongly segmented, no melan, 7/8~.

Unk #237: (.84), og (.20); segmented yolk (maybe); small patch of melan on yolk ventrum; melan on embryo are few, large and dark (full~).

Unk #173: (.93-.99), inner (.89-.95), og (.10); double membrane, yolk segmented.

Unk #106: .91-.94 (.88-.95), og .17(.10-.19); yolk segmented, approx 45-50 myomeres; melan only in caudal finfold at 1 1/16~.

Ammodytes spp. .81 (.77-.98) x .75 (.69-.92), og .19 (.18-.22) (Fahay 1983 reported og=.27); irregular shape, not quite spherical.

Unk #220: (1.10-1.14), inner(1.07-1.09), og(.30-.35); dbl membrane, yolk segmented; no melanophores at 7/8~.

Unk #201: 1.16 (1.11-1.18), inner 1.12 (1.05-1.14), og .32 (.30-.35); double membrane, segmented yolk; no pigmentation at 1/2~.

Brosme brosme 1.28-1.31 (1.15-1.46), og .26-.28 (.24-.30); egg membrane finely pitted; dend and closely spaced melan in 2 distinct dors-lat rows.

Unk #232: (1.42), og (.30); copper tint to membrane, yolk partially segmented (?); at 1 1/8~ melan on head, profusely scatt at mid-body, then dbl rows to 95% BL; patches on yolk near head and abdomen.

Uranoscopidae 1.51-1.59 (1.40-1.69), og .27-.33 (.22-.35); fine sculpturing or pitting of surface.

Unk #205: 1.48 (1.45-1.53), og (.10-.12); sculpted, low relief, orange-peel like.

Maurolicus muelleri 1.54-1.59 (1.37-1.75), inner .88-.89 (.84-.92), og .23-.24 (.21-.25); double membrane, outer strongly sculpted, yolk segmented; no pigmentation (to 7/8~); slender embryo.

Lophius americanus: double membrane; inner diam=(1.43-1.70), outer diam= (1.60-1.90), outer memb is deciduous, irregular and often lost; og (.42-.50); spawned in a veil.

Unk #239: (1.80), og (0.36); slightly non-spherical; egg membrane opaque, hard, and yellowish; yolk indistinctly segmented; no pigmentation (3/4~); head large in comparison to rest of embryo.

Unk #191: 1.89 (1.83-1.95), lesser diam 1.76 (1.60-1.76), og (.53); oval shape; pigment present (info lacking).

Unknown #187 Taxon Code: 100 000 187 Oct 16, 1992

[tentative identification: Myctophidae]

Shape and size: Spherical; (.50)
Oil g: Single; (.10)
Egg membrane: Sculpted
Yolk:
Pv space:
Myomeres:
Spawning: GB: Oct (west, offshore)

Pigmentation and form:

[No comments or specimens survived the fire; maybe some later.]

Unknown #187, observed sizes Jul 18, 1989

Summary: outer diam (point to point): (.50)
mesh size (point to point):
inner diam, smooth:
oil globule diam: (.10)

		Outer diam					Mesh size					Inner diam					
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Obs	**Mean**	Min	Max	Cruise	sta
GB w off	Oct	1e	.-	.-	.50	.50	-	.-	.-	.-	.-	1	.-	.10	.10	AL8010	103

* Observations are of late-stage eggs unless noted otherwise.

Unknown #199 Taxon Code: 100 000 199 Oct 19, 1992

Shape and size: Spherical; Double membrane, sculpted
outer diam, pt-to-pt, .68-.76 (.65-.79)
"mesh" size, pt-to-pt, (.10-.11)
inner diam, smooth, .60 (.60-.61)

Oil g: Single; (.20-.23)

Egg membrane: Outer membrane sculpted in a raised hexagonal pattern.
This outer membrane is somewhat deciduous or fragile and when it is broken away the inner membrane exposed is clear and smooth.

Yolk: Homogeneous

Pv space:

Myomeres:

Spawning: GOM: Dec
GB: Oct
SNE: Jan, Mar, Oct, Nov
MAB: Mar, Sep, Nov

Pigmentation and form:

[No information on this, yet.]

Unknown #199, observed sizes Jul 18, 1989

Summary: outer diam (point to point): .68-.76 (.65-.79)
mesh size (point to point): (.10-.11)
inner diam, smooth: .60 (.60-.61)
oil globule diam: (.20-.23)

		Outer diam					Mesh size					Inner diam					Oil g diam						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
SN off	Mar	6e	.69	.017	.67	.71	-	.-	.-	.-	.-	-	.-	.-	.-	.-	-	.-	.-	.-	.-	AL8402	203
SN off	Mar	1e	.-	.-	.79	.79	-	.-	.-	.-	.-	-	.-	.-	.-	.-	-	.-	.-	.-	.-	AL8402	210
SN off	Mar	2e	.68	.035	.65	.70	-	.-	.-	.-	.-	-	.-	.-	.-	.-	1	.-	.-	.23	.23	AL8402	234
MA off	Mar	2e	.76	.007	.75	.76	-	.-	.-	.-	.-	2	.60	.007	.60	.61	2	.-	.-	.20	.20	AL8402	8

* Observations are of late-stage eggs unless noted otherwise.

Unknown #140 Taxon Code: 100 000 140 Oct 16, 1992

Shape and size:	Spherical; (.74)
Oil g:	Single; (.21)
Egg membrane:	Pustules on chorion (from original description card)
Yolk:	Segmented
Pv space:	
Myomeres:	normal (26-28)
Spawning:	GB: Nov
	MAB: Jul and Nov

Pigmentation and form:

MIDDLE

la-Mid, 5/8~: Oil g ant-vent in position. Melan on embryo, yolk and oil g. Melan small (not punct) dark, scatt over h-brain then back as 2 loose dors-lat rows, diminishing post and ending at approx 9/10 BL; 1 melan directly vent to ttip [on yolk?]. A few (4) melan widely scatt on yolk, a few on prox surface of oil g.

Unknown #140, observed sizes

Summary: (.74), og (.21)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
MA s	Jul	1m	.-	.-	.74	.74	1	.-	.-	.21	.21	EV8006	3

* Observations are of late-stage eggs unless noted otherwise.

Unknown #223 Taxon Code: 100 000 223 Sep 23, 1992

Shape and size:	Spherical; .74 (.72-.76)
Oil g:	Single; .14 (.13-.16), antero-ventral at 7/8~.
Egg membrane:	Single, smooth, clear and colorless
Yolk:	Homogeneous to finely segmented in part.
Pv space:	Narrow (normal)
Myomeres:	approx 15 or 16 preanus, 17 or 18 post., =32 to 34 total
Spawning:	MAB: Sep SAB: Aug

Pigmentation and form:

LATE

7/8~: Punct melan occur from between eyes in some, or from trans bar at posterior part of m-brain, posteriad as dors-lat series to h-brain and as 2 dors-lat rows to 9/10 BL (like *T. adspersus* but with oil g). No melan ventral on body; none in finfold or on yolk or on oil g.

Unknown #223, observed sizes Jul 19, 1989

Summary: .74 (.72-.76), og .14 (.13-.16)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
SAB	Aug	12	.74	.011	.72	.76	9	.14	.011	.13	.16	DL8507	18

* Observations are of late-stage eggs unless noted otherwise.

Unknown #178 Taxon Code: 100 000 178 Sep 22, 1992

Shape and size:	Spherical; .75-.77 (.73-.78)
Oil g:	Single; .17-.18 (.15-.19)
Egg membrane:	Smooth, clear and colorless
Yolk:	Finely segmented, in part; not very noticeable
Pv space:	Narrow (normal)
Myomeres:	approx 25 to 30 (normal)
Spawning:	MAB: Apr, Aug SAB: Apr

Pigmentation and form:

LATE

7/8~: Melan present on embryo, not on yolk (not sure if on oil g or not, too faded to tell). A couple melan on head, then tend to trans bar between m- and h-brain, outline h-brain, then tend to converge to dors mid-line row back to about 7/8 BL. A couple on or near h-gut; sometimes a couple ventral on post 1/4 of body. [The dorsal midline row is strong and reminiscent of that in *P. dentatus*].

Unknown #178, observed sizes Jul 18, 1989

Summary: .75-.77 (.73-.78), og .17-.18 (.15-.19)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
MA s	Apr	3	.77	.009	.76	.78	3	.18	.004	.18	.18	EV8001	2
SA	Apr	1	.-	.-	.78	.78	1	.-	.-	.14	.14	DL8503	134
SA	Apr	11	.75	.019	.73	.78	11	.17	.010	.15	.19	DL8503	143

* Observations are of late-stage eggs unless noted otherwise.

Unknown #219 Taxon Code: 100 000 219 Oct 20, 1992

Shape and size: Spherical; double membrane
outer diam: (.78)
inner diam: (.70)

Oil g: Single; (.21)
Egg membrane: Double membrane, outer is smooth, clear and colorless.
Yolk: Homogeneous
Pv space: Narrow (normal)
Myomeres:
Spawning: MAB: May (south, offshore)

Pigmentation and form:

LATE
5/8~: No pigmentation.

Unknown #219, observed sizes Jul 19, 1989

Summary: outer diam: (.78)
inner diam: (.70)
oil globule diam: (.21)

		Outer diam					Inner diam				Oil globule diam						
Area	Mon	Obs*	**Mean**	SD	Min	Max	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	sta
MA s off	May	1	.-	.-	.78	.78	.-	.-	.70	.70	1	.-	.-	.21	.21	AL8504	132

* Observations are of late-stage eggs unless noted otherwise.

Unknown #208 Taxon Code: 100 000 208 Jan 28, 1994

Shape and size:	Spherical; .78-.79 (.78-.80)
Oil g:	Single; .18-.22 (.18-.23)
Egg membrane:	Smooth, clear and colorless
Yolk:	Segmented
Pv space:	Narrow (normal)
Myomeres:	Approx 40 (15 to 17 + 22 to 25)
Spawning:	MAB: Jan, Mar SAB: Mar

Pigmentation and form:

LATE
7/8~: No pigmentation on embryo, yolk , or oil g. Slender embryo.

Unknown #208, observed sizes Jan 28, 1994

Summary: .78-.79 (.78-.80), og .18-.22 (.18-.23)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
MA s	Mar	2e	.79	.013	.78	.80	2	.22	.013	.21	.23	AL8502	26
MA	Jan	1	.78	.-	.78	.78	1	.18	.-	.18	.18	DL8701	35

* Observations are of late-stage eggs unless noted otherwise.

Unknown #221 Taxon Code: 100 000 221 Oct 20, 1992

Shape and size: Spherical; (.82)

Oil g: Single; "small" [the specimen examined had a ruptured oil g]
Egg membrane: Single, smooth, clear and colorless
Pv space: Narrow (normal)
Myomeres:
Spawning: MAB: May (south, offshore)

Pigmentation and form:

[No information on this, yet.]

Unknown #221, observed sizes Jul 19, 1989

Summary: (.82), og ("small")

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
MA s off	May	1e	.-	.-	.82	.82	0	.-	.-	.-	.-	AL8504	132

* Observations are of late-stage eggs unless noted otherwise.

Unknown #210 Taxon Code: 100 000 210 Oct 4, 1994

Shape and size: Spherical; .82 (.78-.85)

Oil g: Single; .15 (.15-.19), ventral at ea-Mid, post at 7/8~.
Egg membrane: Smooth, clear and colorless
Yolk: Strongly segmented
Pv space:
Myomeres:
Spawning: SNE: Oct
MAB: Jan, Jul
SAB: Mar, Apr and Aug

Pigmentation and form:

MIDDLE
ea-Mid: No pigmentation.

LATE
7/8~: No pigmentation.

Unknown #210, observed sizes Oct 4, 1994

Summary: .82 (.78-.85), og .15 (.15-.19)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
MA off	Jan	1e	.-	.-	.79	.79	1	.-	.-	.17	.17	DL8601	34
MA off	May	1	.-	.-	.85	.85	1	.-	.-	.19	.19	AL9305	15
SA	Mar	1	.-	.-	.78	.78	1	.-	.-	.15	.15	AL8502	31
SA	Mar	1m	.-	.-	.78	.78	1	.-	.-	.16	.16	AL8502	28
SA	Aug	2	.82	.042	.79	.85	2	.15	.000	.15	.15	DL8507	16

* Observations are of late-stage eggs unless noted otherwise.

Unknown #237 Taxon Code: 100 000 237 Sep 30, 1992

Shape and size: Spherical; (.84)

Oil g: Single; (.20)
Egg membrane: Single, smooth, clear and colorless
Yolk: Segmented (I think -- based on 1 specimen, yolk partially opaque and broken up.)
Pv space: Narrow (normal)
Myomeres: 18 pre + 42 post = 60 total
Spawning: MAB: Aug (south)

Pigmentation and form:

LATE
full~: Anus at approx 50% BL. Melan large, dark and few; symmetrically paired on head -- 1 pr on snout, 1 pr between eyes, 1 pr dors-lat on mid-brain, 2 or 3 pr lat to h-brain. Then, on middle 1/2 of body, as single dorsal row of large melan, few in number, which seem to be slightly entering the dorsal finfold. None on post 1/5 of body; none on ventrum of body. There is a single small patch (or 1 large melan) on yolk ventrum, near oil g. A couple of minute melan are beneath the head. None seen on the oil g (but hard to see, due to yolk opacity).

Unknown #237, observed sizes Oct 5, 1989

Summary: (.84), og (.20)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
MA s off	Aug	1	.-	.-	.84	.84	1	.-	.-	.20	.20	DL8708	2

* Observations are of late-stage eggs unless noted otherwise.

Unknown #173 Taxon Code: 100 000 173 Oct 16, 1992

Shape and size: Spherical; double membrane
outer; (.93-.99)
inner; (.89-.95)

Oil g: Single; (.10)
Egg membrane: Double membrane; (outer) smooth, clear and colorless
Yolk: Segmented
Pv space:
Myomeres:
Spawning: MAB: Mar, Apr, Jul, Aug

Pigmentation and form:

[No notes or comments here (yet).]

Unknown #173, observed sizes Jul 18, 1989

Summary: outer diam: (.93-.99)
inner diam: (.89-.95)
oil globule diam: (.10)

		Outer diam					Inner diam				Oil globule diam						
Area	Mon	Obs*	**Mean**	SD	Min	Max	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	sta
MA s	Jul	1e	.-	.-	.93	.93	.-	.-	.89	.89	1	.-	.-	<.30	<.30	EV8006	13
MA s	Aug	1e	.-	.-	.99	.99	.-	.-	.95	.95	1	.-	.-	.10	.10	BE7901	11

* Observations are of late-stage eggs unless noted otherwise.

Unknown #106 Taxon Code: 100 000 163 Oct 16, 1992

Shape and size:	Spherical; .91-.94 (.88-.95)
Oil g:	Single; .17 (.10-.19)
Egg membrane:	
Yolk:	Strongly segmented
Pv space:	
Myomeres:	approx 45-50
Spawning:	GOM: Jun GB: Apr, Jun SNE: Mar, Apr, Oct MAB: Mar-May, Jul-Nov

Pigmentation:

LATE

5/8~ Tail twisted and flexed; a slender embryo; no melanophores.

1 1/16~: The only melan noted are in the caudal-fin precursors, (1 dorsal and 3 terminal melan).

Unknown #106, observed sizes Oct 16, 1992

Summary: .91-.94 (.88-.95), og .17 (.10-.19)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
GB s	Apr	1m	.-	.-	.94	.94	0	.-	.-	.-	.-	AL8602	232
GB s	Jun	2e	.93	.014	.92	.94	-	.-	.-	<.23	<.23	EV8004	124
SN off	Apr	1m	.-	.-	.88	.88	1	.-	.-	.19	.19	AL8701	136
MA	Mar	1e	.-	.-	.90	.90	0	.-	.-	.-	.-	KE8103	35
MA	Mar	1e	.-	.-	.92	.92	0	.-	.-	.-	.-	AL8402	8
MA n off	Mar	1	.-	.-	.95	.95	1	.-	.-	.19	.19	AL8701	1
MA off	May	1e,1m,1	.91	.021	.89	.92	2	.17	.026	.15	.17	DL8603	46
MA	Jul	1e,1	.94	.021	.92	.95	-	.-	.-	.10	.10	EV8006	12

* Observations are of late-stage eggs unless noted otherwise.

***Ammodytes* spp.** Taxon Code: 170 630 100 Feb 22, 1994

Shape and size: Irregular shape, not quite spherical (demersal egg)
Greater diam .81 (.77-.98)
Lesser diam .75 (.69-.92)
Oil g: Single; diam .19 (.18-.22); (0.27 rep. by Fahay, 1983)
Egg membrane:
Yolk:
Pv space:
Myomeres:
Spawning: GB: Nov, Dec
SNE: Nov, Dec, Feb
MAB: Nov, Dec, Feb

Pigmentation and form:

Ammodytes spp., observed sizes Feb 22, 1994

Summary: Irregular shape, not quite spherical (demersal egg)
greater diam: (.98)
lesser diam: (.92)
oil globule diam: [.27] (Fahay, 1983)

		Greater diam					Lesser diam				Oil globule diam						
Area	Mon	Obs*	**Mean**	SD	Min	Max	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	sta
GB	Dec	10	.81	.031	.77	.88	.75	.036	.69	.80	6	.19	.015	.18	.22	DL9014	89
SN	Dec	1	.-	.-	.98	.98	.-	.-	.92	.92	0	.-	.-	.-	.-	AL8012	87

* Observations are of late-stage eggs unless noted otherwise.

Unknown #220 Taxon Code: 100 000 220 Oct 4, 1994

Shape and size:	Spherical; double membrane outer diam: (1.10-1.28) inner diam: (1.07-1.09)
Oil g:	Single; (.28-.35)
Egg membrane:	Double membrane, outer is smooth, clear and colorless
Yolk:	Strongly segmented
Pv space:	Narrow (normal)
Myomeres:	
Spawning:	SNE: Nov MAB: May, Aug and Nov, (south, offshore)

Pigmentation and form:

LATE:
7/8~: No pigmentation at this stage (cruise: DL9311, station: 170).

Unknown #220, observed sizes Oct 4, 1994

Summary: outer diam: (1.10-1.28)
inner diam: (1.07-1.09)
oil globule diam: (.28-.35)

		Outer diam					Inner diam				Oil globule diam						
Area	Mon	Obs*	**Mean**	SD	Min	Max	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	sta
SN off	Sep	1	.-	.-	1.28	1.28	.-	.-	1.07	1.07	1	.-	.-	.28	.28	DL9311	170
MA s off	May	1e	.-	.-	1.14	1.14	.-	.-	1.09	1.09	-	.-	.-	.-	.-	AL8504	132
MA s	Aug	1e	.-	.-	1.12	1.12	.-	.-	1.09	1.09	1	.-	.-	.35	.35	DL8507	25
MA s off	Nov	1e	.-	.-	1.10	1.10	.-	.-	1.07	1.07	1	.-	.-	.30	.30	DL8510	6

* Observations are of late-stage eggs unless noted otherwise.

Unknown #201 Taxon Code: 100 000 201 Oct 20, 1992

Shape and size:	Spherical; double membrane outer diam, 1.16 (1.11-1.18) inner diam, 1.12 (1.05-1.14
Oil g:	Single; .32 (.30-.35)
Egg membrane:	Double, smooth, clear and colorless
Yolk:	Segmented
Pv space:	
Myomeres:	approx 25 to 30 (normal)
Spawning:	SNE: Oct, Nov, Jan (offshore) MAB: Jan, Mar, Apr, Sep, Nov

Pigmentation and form:

LATE
ea-Late, 1/2~: No pigmentation.

Unknown #201, observed sizes Feb 18, 1994

Summary: outer diam: 1.16 (1.11-1.18)
inner diam: 1.12 (1.05-1.14)
oil globule diam: .32 (.30-.35)

		Outer diam					Inner diam				Oil globule diam						
Area	Mon	Obs*	**Mean**	SD	Min	Max	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	sta
GB e off	Oct	1	.-	.-	1.13	1.13	.-	.-	1.06	1.06	1	.-	.-	.33	.33	DL9011	246
SN s off	Nov	1	.-	.-	1.11	1.11	.-	.-	1.05	1.05	0	.-	.-	.-	.-	DL8510	89
SN off	Jan	1e	.-	.-	1.16	1.16	.-	.-	1.14	1.14	0	.-	.-	.-	.-	DL8601	62
MA	Mar	1e,1m,1	1.16	.021	1.14	1.18	1.12	.021	1.11	1.14	3	.32	.028	.30	.35	AL8602	59
MA off	Apr	1m	.-	.-	1.16	1.16	.-	.-	1.10	1.10	1	.-	.-	.30	.30	DL8503	97
MA n off	Sep	1e,1	1.16	.014	1.15	1.17	1.12	.014	1.11	1.13	-	.-	.-	.32	.32	AL8408	63

* Observations are of late-stage eggs unless noted otherwise.

Brosme brosme Taxon Code: 148 010 701 Feb 4, 1994

Shape and size: Spherical; 1.28-1.31 (1.15-1.46)

Oil g: Single; 0.26-0.28 (0.24-0.30)
Egg membrane: Fine pores visible
Yolk:
Pv space:
Myomeres:
Spawning: GOM: Apr-Nov
GB: Apr-Oct
SNE: Apr-Aug
MAB: Mar-Jun, Sep, Nov

Pigmentation and form:

Brosme brosme, observed sizes Feb 4, 1994

Summary: 1.28-1.31 (1.15-1.46), og .26-.28 (.24-.30)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
GM	May	10	1.28	.080	1.15	1.39	10	.26	.015	.24	.30	DL7905	140
GM e	Jun	1	.-	.-	1.27	1.27	1	.-	.-	.26	.26	DL8603	189
GM	Jul	11	1.31	.044	1.22	1.37	11	.28	.011	.27	.30	AL7906	122
GB w	Oct	1	.-	.-	1.46	1.46	1	.-	.-	.26	.26	DL8906	191
MA	Apr	1	.-	.-	1.29	1.29	1	.-	.-	.26	.26	AA8704	29

* Observations are of late-stage eggs unless noted otherwise.

Unknown #232 Taxon Code: 100 00 232 Sep 30, 1992

Shape and size: Spherical; (1.42)

Oil g: Single; (.30)
Egg membrane: Single, smooth, clear and with a copper tint.
Yolk: Partially segmented?
Pv space: Narrow (normal)
Myomeres: Rough count 35 (20+15)
Spawning: MAB: Jun (south)

Pigmentation and form:

Late
1 1/8~: Anus at approx 60% BL. Finfold broad; both dorsal and anal ffolds greater in depth than body depth. Melan present on embryo, yolk and oil g, but not in ffolds. On head, melan in 2 dors-lat rows from snout back to include h-brain, with a few scatt between and lat. From h-brain to anus melan scatt over entire body (dors, lat and ventral), as well as on h-gut. Post to anus most melan restricted to double rows both dorsally and ventrally which extend to about 95% BL. None in ffolds. On yolk faint dend melan scatt on dors 2/3 (large patches near head and abdomen), but not on ventral 1/3. Oil g with several scatt melan.

Unknown #232, observed sizes Jul 19, 1989

Summary: (1.42), og (.30)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
MA so	Jun	1	.-	.-	1.42	1.42	1	.-	.-	.30	.30	DL8604	145

* Observations are of late-stage eggs unless noted otherwise.

Uranoscopidae Taxon Code: 170 340 000 Sep 17, 1992

[tentative identification: *Astroscopus guttatus*]

Shape and size:	Spherical, 1.47-1.59 (1.40-1.69)
Oil g:	Single; .27-.33 (.22-.35)
Egg membrane:	Finely sculpted, single, clear and colorless
Yolk:	Homogeneous
Pv space:	Narrow (normal)
Myomeres:	
Spawning:	MAB: Apr-Oct SAB: Apr and Aug

Pigmentation and form:

MIDDLE

mid-Mid, 3/8-4/10~: A thick-bodied embryo; oil g post to tailtip. Numerous dark, punct melan widespread on embryo with a few on oil g and on yolk near oil g. Melan on dorsum from snout to tailtip, most numerous and widespread from head and post to about 2/3 BL -- rather like *S. aquosus* pigmentation at this stage. On head 1 or 2 melan on snout, with most occurring from between eyes and posteriad. Melan spreading lat at mid-body and on posterior area, and on yolk surface near tailtip and oil g.

LATE

45%~, twisting: Stubby embryo (late stage at <1/2~); oil g post. Melan dark and compact (punct to stellate), rarely dendritic. Melan found on embryo and oil g; none on yolk or in finfold. On embryo, present from snout to about 95% BL; a few scatt on snout and between eyes; tend to surround mid-brain lobes; then lat to ant 1/2 h-brain and lat and dors over post 1/2 h-brain and converging to a bold mid-dors series by end of h-brain and extending post to 90% BL, where ends abruptly. Also, melan occur lat and dors-lat on middle 1/3 of body, and vent-lat on body post to h-brain, extending to 90% BL. Several melan on and streaming towards (on h-gut?) oil g.

5/8~, twisted and flexed: Thick-bodied embryo; post oil g; finfold approx 1/2-2/3 BD (just post to anus). General appearance of bold, dark, blotchy to dend melan from snout back to, and stopping abruptly at, 9/10 BL. Melan widespread over head, but not over eyes, tend to surround h-brain, then posteriad as dark and blotchy, dors and vent-lat series, with a few lat at mid-body and a couple along h-gut. A few dark melan present on oil g; none in finfold; and only rarely on yolk (near oil g and beneath head).

3/4-7/8~: Stout embryo; very large head; post oil g; well developed finfold (>BD, post anus); anus at about mid-body. Melan on embryo as before -- large, dark and blotchy to dendritic, occurring from snout and posteriad to an abrupt end at 7/8 BL. Melan on body are generally lat on ant 1/2 of body, and dors and vent on post 1/2. Melan present on h-gut, on oil g and may be a couple on yolk near oil g, otherwise yolk is immaculate.

Summary: 1.47-1.59 (1.40-1.69), og .27-.33 (.22-.35)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
MA	May	1	.-	.-	1.57	1.57	1	.-	.-	.27	.27	DL8003	3
MA	Jun	5	1.59	.070	1.48	1.66	0	.-	.-	.-	.-	DL8604	152
MA	Jul	1	.-	.-	1.50	1.50	1	.-	.-	.24	.24	EV8006	2
MA s	Jul	10	1.58	.060	1.50	1.69	8	.33	.017	.30	.35	AL8407	100
MA s	Aug	2	1.50	.014	1.49	1.51	2	.26	.000	.26	.26	DL8507	21
MA s	Aug	1m,1	1.47	.027	1.46	1.49	1	.-	.-	.27	.27	DL8708	2
MA s	Aug	6m,5	1.57	.054	1.46	1.66	8	.27	.022	.23	.30	DL8708	10
MA s	Sep	1	.-	.-	1.40	1.40	1	.-	.-	.28	.28	AL8605	32
MA	Sep	1	.-	.-	1.48	1.48	1	.-	.-	.22	.22	AL8605	63
MA	Sep	1	.-	.-	1.51	1.51	1	.-	.-	.22	.22	AL8605	78
MA	Oct	8	1.51	.046	1.44	1.56	7	.27	.014	.24	.28	AL7911	23

* Observations are of late-stage eggs unless noted otherwise.

Unknown #205 Taxon Code: 100 000 205 Sep 23, 1992

Shape and size: Spherical; 1.48 (1.45-1.53)

Oil g: Single; (.10-.12)
Egg membrane: Sculpted, hexagonal pattern (very low relief sculpting)
irregular hexagons approx .05mm across; surface appears orange-peel like at first glance.
Yolk: Homogeneous
Pv space:
Myomeres:
Spawning: MAB: Feb (offshore)

Pigmentation and form:

[No information on this, yet.]

Unknown #205, observed sizes Jul 19, 1989

Summary: 1.48 (1.45-1.53), og (.10-.12)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
MA off	Feb	4e	1.48	.035	1.45	1.53	-	.-	.-	.10	.12	AL8502	13

* Observations are of late-stage eggs unless noted otherwise.

Maurolicus muelleri Taxon Code: 121 140 801 Oct 15, 1992

Shape and size: Spherical, prominently sculpted (hexagons)
Diam., outer, pt-to-pt; 1.54-1.59 (1.37-1.75)
Diam, inner, smooth; .88-.89 (.84-.92)

Oil g: Single; yellow; post to post-vent; diam .23-.24 (.21-.25)
Egg membrane: Outer; sculpted hexagons; mesh size .25-.27 (.18-.34) Inner; smooth, clear and colorless
Yolk: Segmented
Myomeres:
Pv space: Narrow (normal)
Spawning: Deep water (shelf edge);
GOM: Sep-Dec and Feb
GB: Aug-Jan, Mar-Jun
SNE: Mar-Jan
MAB: Jan-Dec
SAB: Mar, Apr

Pigmentation and form:

MIDDLE: No pigmentation. A slender embryo with a narrow head.

LATE:
Ea-Late: No pigmentation. A slender embryo with a narrow head.
3/4~: " " " " " " " " "
7/8~: " " " " " " " " "

Maurolicus muelleri, observed sizes Oct 5, 1989

Summary: outer diam (point to point): 1.54-1.59 (1.37-1.75)
mesh size (point to point): .25-.27 (.18-.34)
inner diam, smooth: .88-.89 (.84-.92)
oil globule diam: .23-.24 (.21-.25)

		Outer diam					Mesh size					Inner diam					Oil g diam						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
MA s	Apr	10	1.54	.114	1.37	1.75	-	.25	.054	.18	.34	10	.88	.024	.84	.92	10	.23	.009	.21	.24	DL8503	136
MA s off	Aug	2	1.59	.013	1.58	1.60	11	.27	.021	.24	.31	2	.89	.011	.88	.90	2	.24	.013	.23	.25	DL8708	1

* Observations are of late-stage eggs unless noted otherwise.

Lophius americanus Taxon Code: 195 010 202 Sep 16, 1992

Shape and size:

Oil g:
Egg membrane:
Yolk:
Pv space:
Myomeres:
Spawning: GOM: Jun, Sep
GB: May
SNE: Mar, Jun, Sep, Oct
MAB: May

Pigmentation and form:

Lophius americanus, observed sizes Jul 17, 1989

Summary: outer diam, deciduous, irreg: (1.60-1.90)
inner diam, irreg: (1.43-1.70)
oil globule diam: (.42-.50)

		Outer diam					Inner diam					Oil globule diam						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	sta
SN w off	Mar	0	.-	.-	.-	.-	1	.-	.-	1.60	1.70	1	.-	.-	.45	.50	AL8502	135
SN w	May	1m	.-	.-	1.60	1.90	1	.-	.-	1.55	1.60	1	.-	.-	.42	.42	DL8704	158
SN w	May	1m	.-	.-	1.64	1.64	1	.-	.-	1.43	1.54	1	.-	.-	.45	.45	DL8704	162

* Observations are of late-stage eggs unless noted otherwise.

Unknown #239 Taxon Code: 100 000 239 Jan 28, 1994

Shape and size:	Slightly non-spherical
	Diam approx. 1.80
Oil g:	Single; diam 0.36, amber
Egg membrane:	Quite opaque, orange-yellow, hard and thick
Yolk:	Indistinctly segmented, 80% of yolk amber, 20% clear
Pv space:	Narrow, (normal)
Myomeres:	
Spawning:	GB: Mar (deep water, southern shelf edge)

Pigmentation and form:

LATE

3/4~, No pigmentation visible on embryo or yolk, even after excising embryo. Vent at 50% body length. Head bulbous and large in comparison to rest of embryo. Eyes appear well developed.

Unknown #239, observed sizes Jan 28, 1994

Summary: diam (1.80), o.g. (0.36)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
GB	Mar	1	1.80	.-	1.80	1.80	1	0.36	.-	.36	.36	DL9105	219

* Observations are of late-stage eggs unless noted otherwise.

Unknown #91 Taxon Code: 100 000 091 Dec 21, 1992

Shape and size:	Almost spherical, slightly oval, (often collapsed) 1.01-1.03 (.99-1.10) x .97-.98 (.93-1.03)
Oil g:	None
Egg membrane:	Smooth, clear and colorless
Yolk:	Homogeneous (a few eggs are slightly segmented)
Pv space:	Narrow (normal)
Myomeres:	"Numerous"
Spawning:	GB: Jun, Aug, Oct SNE: May-Jul, Sep, Oct MAB: Mar-Oct SAB: Aug

Pigmentation:

MIDDLE
mid-Middle: No pigmentation.

la-Middle: Several minute melan scattered on dors aspect of embryo, from h-brain post to about 2/3 BL.

LATE
5/8~: Tiny melan scatt on dors and dors-lat aspects of embryo, a couple on yolk next to embryo at mid-body.

7/8~: Numerous melan scatt on dors of head and h-brain, then scatt post dors and dors-lat; some vent postanally (but fewer than dorsally); may extend into anal ffold postanally. Yolk surface void except for a couple tight alongside abdomen.

Unknown #91, observed sizes Aug 24, 1992

Summary: greater diam 1.01-1.03 (.99-1.10), lesser .97-.98 (.93-1.03)

		Greater diameter					Lesser diameter					
Area	Mon	Obs*	**Mean**	SD	Min	Max	**Mean**	SD	Min	Max	Cruise	Sta
SNE	Sep	3	1.01	.019	.99	1.03	.97	.011	.95	.97	DL8607	64
MA s	Apr	1	.-	.-	1.04	1.04	.-	.-	1.02	1.02	DL8503	130
MA	Aug	3	1.02	.025	1.00	1.05	.98	.040	.93	1.01	DL7709	70
MA	Aug	1	.-	.-	1.03	1.03	.-	.-	.95	.95	DL8607	34
MA	Aug	12e	1.03	.040	.99	1.10	.98	.033	.93	1.03	DL8607	38
MA	Sep	10m	1.02	.024	.99	1.07	.97	.025	.93	1.01	DL8607	51
MA	Oct	1	.-	.-	1.07	1.07	.-	.-	1.03	1.03	AL7911	33

*Observations are of late-stage eggs unless noted otherwise.

NO OIL (listed by size) Oct 5, 1994

Measurements for egg chorion and oil globule diameters were made to the nearest 0.01 millimeter. Sizes within parentheses represent minimum and maximum values observed.

Taxon code 100000011, no oil, <.80
" " 100000012, " " , .81-.99
" " 100000013, " " , 1.00-1.10

Use the above codes for early eggs, otherwise called unidentified, which have single egg-membranes, are smooth, spherical and have homogeneous yolks.

Unk #170: Dbl memb, .71 (.69-.74) and .68 (.65-.72); segmented yolk; no pigment (5/8~); slender embryo.

Unk #134: (.69-.75); segmented yolk; no pigment (7/8~).

Unk #233: .76-.77 (.73-.83); yolk homog and opaque (perhaps finely segmented); scatt dors and dors-lat melan, couple ventral; melan scatt on yolk vent or ant.

Unk #217: .76-.80 (.74-.81); segmented yolk; no pigment (at full~).

Pleuronectes americanus .80-.82 (.73-.95) x .75-.81 (.69-.84); thick chorion.

Unk #235: (.86); myomeres approx 40; at ea-late few (14), tiny, punct and faint melan on dors and dors-lat aspects of abdomen.

Limanda ferruginea .82-.92 (.76-.96)

Unk #207: (.88-.90); a few faint melan on post 1/2 body (at 5/8~).

Tautogolabrus adspersus .84-.96 (.78-1.00)

Anchoa mitchilli.88-.92 (.77-.99) x .73-.80 (.70-.85); segmented yolk.

Unk #63: .91-.95 (.88-.99) x .85-.92 (.81-.95); most are non-spherical, some collapsed; virtually no pigment.

Unk #126: Dbl memb, .96 (.89-.99) and .88 (.82-.92); segmented yolk; no pigm (1/2-5/8~).

Unk #127: .90-.97 (.89-1.00) x .90-.93 (.84-.97); most are non-spherical; pigmented; numerous minute melan; [more pigm than Unk #63].

Unk #91: 1.01-1.03 (.99-1.10) x .97-.98 (.93-1.03); most are non-spherical, often collapsed; numerous tiny melan on embryo.

Tautoga onitis .96-1.10 (.95-1.14)

Pollachius virens .99-1.14 (.94-1.17)

Engraulis eurystole 1.02-1.25 x 0.50-0.80; segmented yolk; no pigment.

Unk #211: sculpted (coarsely); outer diam (pt-to-pt) 1.03-1.04 (.96-1.08), inner (smooth) .99-1.00 (.94-1.03); pigm like a lightly pigm *T. onitis*.

Unk #222: sculpted (finely ?); outer diam (pt-to-pt) 1.24 (1.22-1.25), inner (smooth) 1.18 (1.16-1.20); dend melan scatt lat and ventrally; spot on vent.

Unk #212: sculpted (finely); outer diam (pt-to-pt) 1.30-1.32 (1.18-1.39), inner (smooth) 1.27-1.30 (1.21-1.37); two dors-lat rows of melan.

Clupea harengus 1.25-1.29 (1.20-1.35); thick chorion, usually irregular shape.

Glyptocephalus cynoglossus 1.27-1.34 (1.10-1.44)

Melanogrammus aeglefinus 1.28-1.50 (1.22-1.61)

Gadus morhua 1.30-1.49 (1.20-1.64)

Unk #214: (1.41); at 7/8~ broad head, heavy-bodied embryo, fan-like pectorals; punct melan lightly scatt on head, body and fins.

Anchoa hepsetus 1.50-1.63 (1.34-1.76) x .78-.87 (.73-.92); segmented yolk.

Unk #125: Dbl memb, 1.64-1.72 (1.51-1.79) & 1.60-1.68 (1.48-1.73); no melanophores at (1 1/4~); segmented yolk; anus at 7/8 BL.

Unk #175: Dbl memb, 1.84 (1.80-1.91) and 1.72 (1.71-1.77); h-gut long and bifurcated; faint punct melan (at 1 1/2~) on ventrum of body, on h-gut and in eyes.

Unk #238: (1.98); no oil; wide perivitelline space; segmented yolk; slender embryo; no melan (full~); myomeres approx 55+30to40; gut ends at approx 7/8 to 9/10 BL.

Unk #113: (2.14-2.30); segmented yolk.

Hippoglossoides platessoides 2.06-2.38 (1.80-2.67); wide perivitelline space.

Zu cristata (2.30)

Unk #229: sculpted (very finely); (2.40-2.57); sticky egg, it floats; numerous myomeres; melan on ant 1/2 to 2/3 of embryo and in large patches on yolk.

Unk #195: (3.10-3.11); advanced development at 5/8~; numerous punct melan on ant 2/3 body.

Unknown #170 Taxon Code: 100 000 170 Jan 15, 1993

Shape and size:	Spherical; Double membrane outer .71 (.69-.74), inner .68 (.65-.72)
Oil g:	None
Egg membrane:	Double; smooth, clear and colorless (and tough).
Yolk:	Segmented
Pv space:	
Myomeres:	approx 30 (5)
Spawning:	GB: Dec, Jan SNE: May, Aug-Nov MAB: Jan, May, Jul-Sep SAB: Mar

Pigmentation:

LATE
ea-Late, 5/8~: No pigmentation; slender embryo, head not much wider than body.

Unknown #170, observed sizes

Summary: double membrane, outer .71 (.69-.74), inner .68 (.65-.72)

		Greater diameter					Lesser diameter					
Area	Mon	Obs*	**Mean**	SD	Min	Max	**Mean**	SD	Min	Max	Cruise	Sta
MA s off	Jan	1e	.-	.-	.72	.72	.-	.-	.70	.70	DL8601	6
MA off	Jul	1e	.-	.-	.72	.72	.-	.-	.69	.69	AL7906	30
SAB off	Mar	3e,1	.71	.021	.69	.74	.68	.028	.65	.72	AL8502	26

*Observations are of late-stage eggs unless noted otherwise.

Unknown #134 Taxon Code: 100 000 134 Jan 15, 1993

Shape and size: Spherical; (.69-.75)

Oil g: None
Egg membrane:
Yolk: Segmented
Pv space:
Myomeres:
Spawning: GB: Oct
SNE: Sep, Nov
MAB: Mar-May, Sep-Dec

Pigmentation:

LATE
7/8~: No pigmentation

Unknown #134, observed sizes

Summary: (.69-.75)

		Egg diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Cruise	Sta
GB s	Oct	1	.-	.-	.69	.69	AL7911	125
MA s	Sep	49	.-	.-	.72	.72	AL8010	2
MA s	Sep	5m,11	.-	.-	.75	.75	DL8106	23

* Observations are of late-stage eggs unless noted otherwise.

Unknown #233 Taxon Code: 100 000 233 Mar 31, 1993

Shape and size: Spherical; .76-.77 (.73-.83)

Oil g: None
Egg membrane: Single, smooth, clear and colorless
Yolk: Homogeneous (or finely segmented?)
Pv space: Narrow (normal)
Myomeres: approx 25-30 (normal)
Spawning: MAB: Aug, Sep

Pigmentation and form:

LATE

3/4-7/8~: Yolk is quite opaque, perhaps finely segmented. Melan dend to stell scatt from snout to about 95% BL; occur on dors of head, lat to h-brain, then post as a few widely scatt melan, mostly dors and dors-lat, with a couple ventral post to anus. Some with a slightly darker and more prominent melan at tailtip (dorsum). Anus at approx mid-body. On yolk, several widely scatt dend melan; mostly on ventral 2/3 of yolk, or on anterior 1/2.

Unknown #233, observed sizes Mar 31, 1993

Summary: .76-.77 (.73-.83)

		Egg diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Cruise	Sta
MA	Sep	5	.77	.024	.75	.80	AL8605	73
MA	Sep	1	.-	.-	.83	.83	AL8605	63
MA	Sep	4	.76	.024	.73	.78	AL8605	78

* Observations are of late-stage eggs unless noted otherwise.

Unknown #217 Taxon Code: 100 000 217 Mar 31, 1993

Shape and size: Spherical (most; some slightly irreg), .76-.80 (.74-.81)

Oil g: None
Egg membrane: Smooth, clear and colorless
Yolk: Strongly segmented
Pv space: Normal (narrow)
Myomeres: Numerous, approx 35+ + 20+
Spawning: MAB: May, Aug, Sep., south, inshore

Pigmentation:

LATE
full~: No pigmentation.

Unknown #217, observed sizes

Summary: 0.76-0.80 (.74-.81)

		Egg diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Cruise	Sta
MA s	May	3	.80	.015	.78	.81	AL8504	129
MA	Sep	6	.76	.022	.74	.79	AL8707	57

* Observations are of late-stage eggs unless noted otherwise.

Pseudopleuronectes americanus Taxon Code: 183 020 101 Dec 10, 1992

Shape and size: Non-spherical,
greater diam .80-.82 (.73-.95)
lesser diam .75-.81 (.69-.84)

Oil g: None
Egg membrane: Thick, slightly opaque, rough
Yolk:
Pv space:
Myomeres:
Spawning: GOM: Apr-Jun
GB: Mar-Jun
SNE: Feb-May
MAB: Apr

Pigmentation and form:

Pseudopleuronectes americanus, observed sizes Jan 30, 1990

Summary: greater diam .80-.82 (.73-.95), lesser .75-.81 (.69-.84)

		Greater diameter					Lesser diameter					
Area	Mon	Obs*	**Mean**	SD	Min	Max	**Mean**	SD	Min	Max	Cruise	Sta
GB	Apr	1	.-	.-	.91	.91	.-	.-	.81	.81	DL8503	28
GB	Apr	1e,1	.82	.021	.81	.84	.81	.042	.78	.84	DL8503	30
GB	Apr	1e	.-	.-	.84	.84	.-	.-	.80	.80	DL8503	39
GB s	Apr	3m,3	.80	.030	.76	.85	.77	.039	.72	.82	AL8701	258
SN	Apr	9e,1	.80	.035	.73	.84	.75	.029	.69	.78	DL8503	45
SN	Apr	9	.81	.060	.75	.95	.75	.030	.69	.77	AL8701	201

*Observations are of late-stage eggs unless noted otherwise.

Unknown #235 Taxon Code: 100 000 235 Mar 31, 1993

Shape and size: Spherical; (.86)

Oil g: None
Egg membrane: Single, smooth, clear and colorless.
Yolk: Homogeneous
Pv space: Narrow (normal)
Myomeres: approx 40 or so (estimated)
Spawning: MAB: Aug, Nov, south

Pigmentation and form:

LATE
ea-Late, 5/8~: Tail not yet twisted or flexed; myomeres tough to count but numerous (maybe 40 or so). Melan punct and very tiny, approx 14 melan in all, scatt over dors and dors-lat aspects of abdominal area.
[Not Unk #63 because of pigment; not Unk #207 because of location of melan (abdominal in Unk #235 rather than on post 1/2 body as in Unk #207)].

Unknown #235, observed sizes Mar 31, 1993

Summary: (.86)

		Egg diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Cruise	Sta
MA s	Nov	1	.-	.-	.86	.86	DL8510	3

* Observations are of late-stage eggs unless noted otherwise.

Limanda ferruginea Taxon Code: 183 020 301 Dec 9, 1992

Be wary of confusion with Unk #127, especially in the area off NJ to MD during (May) Jun and Jul, and with *T. adspersus*.

Shape and size:	Spherical Diam: .82-.92 (.76-.96)
Oil g:	None
Egg membrane:	Smooth, clear and colorless
Yolk:	Homogeneous
Pv space:	Narrow (normal)
Myomeres:	
Spawning:	GOM: Mar-Sep GB: Mar-Sep SNE: Feb-Aug MAB: Mar-Jun

Pigmentation and form:

EARLY

Epiboly 9/10 to almost complete: A few small melan occur in a dorsal abdominal patch, but only in some specimens.

MIDDLE

ea-Middle: Melan small, slightly stell and faint; scatt dors from post of eyes to approx 3/4 BL; most abundant over h-brain and abdominal; melan not lined up. Some specimens still immaculate at this stage.

mid-Middle: Same, but melan darker and now from between eyes and post (sparsely) almost to ttip.

late-Middle: Small, punct to stell melan scatt dors and dors-lat, snout to ttip; in some specimens there tends to be a mid-dors row on post 1/2 body, not 2 rows [in contrast to *T. adspersus* and Unk #127]. Viewed dorsally this appears as scatt melan with a mid-dors series, or almost as 3 rows (1 mid-dors and 2 dors-lat rows).

LATE

ea-Late, 5/8~, not yet twisting or flexing,: no ffold yet

Many small, not quite punct, often faint [compared to *T. adspersus*] melan on embryo, snout to ttip. Sparse on head, but present on snout, over eyes, then post as scatt over h-brain (not outline it) and back dorsally virtually to ttip. A few melan lat, vent-lat and vent on post 1/4 body (where tail lifts from yolk surface). Dors melan tend to line up in mid-dors row rather than scatt or in 2 rows; this occurs in most, but not all, specimens.

5/8 to 3/4~, twisting and flexing: finfold forming; anus at about 3/4 BL.

Small melan, punct to slightly stell, sparsely scatt over head, often over eyes, and scatt over h-brain (not outlining it); tend to converge posteriad to mid-dors row at base of ffold and a few scatt lat (post to h-brain); a few vent on post 1/4 to 1/3 of body. A couple of melan may be above and below h-gut, but not in all specimens. Sides of embryo are relatively immaculate compared to dors and vent surfaces, but there are a few isolated scatt melan on sides. None in ffold or on yolk.

3/4 to 7/8~: Pigmentation similar to above; melan now appear more spread out, due to increasing length of embryo. Melan (2 or 3) more consistently above and below h-gut.

7/8 to full~: Anus at about 50% BL; approx 35 postanus myomeres.
Melan punct to slightly stell, scatt dors and dors-lat over head and h-brain, then post as mid-dors and mid-vent series with very few lat; a few dors and vent on h-gut; none in ffold or on yolk. Viewed laterally to post 1/3 of body the dors and vent series of melan form a distinct dashed outline of the embryo tail (not finfold).

Limanda ferruginea, observed sizes Oct 4, 1994

Summary: .82-.92 (.76-.96)

		Egg diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Cruise	Sta
GB	Mar	10	.87	.020	.84	.91	DL9105	193
GB	Mar	10	.89	.034	.85	.95	AL9203	203
GB	Apr	10	.87	.035	.82	.95	AL8003	6
GB	Apr	8	.91	.032	.84	.89	DL8503	14
GB	Apr	11	.92	.033	.85	.96	DL8503	29
GB e	Apr	15	.88	.039	.78	.94	AL8701	258
GB e	Apr	11	.86	.037	.80	.91	AL8701	260
GB e	Apr	10	.85	.031	.80	.91	DL9004	269
GB	Apr	10	.86	.022	.82	.88	AL9304	235
GB	Apr	10	.87	.022	.82	.88	AL9304	250
SN	Mar	3	.88	.019	.86	.90	AL8701	86
SN	Mar	10	.83	.018	.80	.85	DL9004	132
SN	Mar	10	.86	.026	.82	.89	DL9105	138
SN	Mar	10	.86	.022	.82	.88	AL9203	153
SN	Mar	10	.88	.013	.85	.88	AL9203	156
SN	Apr	6	.90	.024	.86	.93	AL8701	89
SN in	Apr	10	.88	.021	.85	.91	AL8701	117
SN	Apr	9	.87	.021	.84	.91	AL8701	130
SN	May	11	.88	.025	.83	.91	DL7905	66
SN	May	3e,1m,5	.88	.035	.83	.92	DL7905	67
SN	May	10	.86	.025	.82	.89	DL7905	69
SN	Jun	12	.85	.014	.82	.87	DL8003	76
SN	Jun	1	.	.	.84	.84	DL8604	15
MA	Apr	10	.88	.025	.85	.92	AA8704	52
MA	May	4	.82	.041	.76	.86	DL7905	45
MA	May	10	.85	.025	.81	.89	DL8704	57

* Observations are of late-stage eggs unless noted otherwise.

Unknown #207 Taxon Code: 100 000 207 Mar 31, 1993

Shape and size: Spherical; (.88-.90)

Oil g: None
Egg membrane: Smooth, clear and colorless
Yolk: Homogeneous
Pv space:
Myomeres:
Spawning: MAB: Mar, Apr (south, offshore)

Pigmentation:

LATE
5/8~: A few faint dendritic melan on post 1/2 body, on dors, dors-lat and vent aspects. None on yolk.

Unknown #207, observed sizes

Summary: (.88-.90)

		Egg diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Cruise	Sta
MA s	Apr	1	.-	.-	.88	.88	DL8503	126
SA	Mar	1	.-	.-	.90	.90	AL8602	56

* Observations are of late-stage eggs unless noted otherwise.

Tautogolabrus adspersus Taxon Code: 170 280 101 Dec 21, 1992

Shape and size: Spherical; .84-.96 (.78-1.00)

Oil g: None
Egg membrane: Single, smooth, clear and colorless
Yolk: Homogeneous
Pv space: Narrow (normal)
Myomeres:
Spawning: GOM: May-Sep
GB: May-Oct
SNE: May-Sep
MAB: May-Sep, Nov

Pigmentation and form:

Tautogolabrus adspersus, observed sizes Dec 21, 1992

Summary: .84-.96 (.78-1.00)

		Egg diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Cruise	Sta
GOM	Jul	17	.89	.026	.84	.92	WI8701	269
GOM	Jul	13	.90	.017	.88	.93	WI8701	270
GB	Jul	7	.94	.029	.90	.99	DL8604	293
GB	Jul	3	.95	.011	.93	.95	DL8604	307
GB	Jul	4	.95	.027	.93	.98	DL8604	309
GB	Jul	10	.96	.014	.94	.98	DL8604	310
GB	Jul	9	.92	.022	.89	.96	DL8604	312
GB	Jul	8	.96	.028	.91	1.00	DL8604	318
GB	Aug	4	.91	.013	.90	.93	AL8407	416
GB	Aug	8	.95	.025	.91	.99	AL8705	488
GB	Aug	4	.96	.024	.93	.99	AL8705	512
GB	Aug	2m,12	.94	.023	.90	.97	AL8705	520
GB	Aug	8	.93	.022	.90	.96	AL8705	562
SN in	May	24	.90	.023	.86	.93	AL8504	86
SN	May	7	.90	.029	.88	.95	DL8704	175
SN	Jun	25	.89	.033	.82	.92	DL8003	76
SN	Jun	10	.87	.020	.85	.90	DL8604	20
SN	Jul	20	.87	.024	.84	.91	AL7906	57
SN in	Jul	8	.85	.032	.82	.91	AL8406	3
SN in	Jul	21	.84	.025	.78	.88	AL8407	17
SN	Jul	10	.86	.018	.83	.89	DL8604	169
MA n	Jun	10	.86	.029	.81	.90	DL8604	26

* Observations are of late-stage eggs unless noted otherwise.

Anchoa mitchilli Taxon Code: 121 060 103 Dec 9, 1992

Shape and size: Non-spherical;
Greater diam .88-.95 (.77-1.07)
Lesser diam .73-.80 (.70-.85)

Oil g: None
Egg membrane: Smooth, clear and colorless
Yolk: Segmented
Pv space: Narrow (normal)
Myomeres:
Spawning: SNE: May-Aug, Oct
MAB: Apr-Sep
SAB: Apr

Pigmentation and form:

No pigmentation at any stage.

Anchoa mitchilli, observed sizes Oct 5, 1990

Summary: greater diam .88-.95 (.77-1.07) lesser .73-.80 (.70-.85)

		Greater diameter					Lesser diameter					
Area	Mon	Obs*	**Mean**	SD	Min	Max	**Mean**	SD	Min	Max	Cruise	Sta
MA	May	10	.90	.038	.83	.95	.80	.021	.77	.82	DL8003	9
MA	May	10	.90	.066	.80	.99	.78	.041	.72	.85	DL8003	17
MA	Jun	10	.95	.076	.87	1.07	.80	.023	.77	.83	WI8701	5
MA n	Jun	10	.92	.060	.77	.98	.80	.028	.76	.85	DL8604	26
MA n	Jun	10e	.88	.050	.79	.94	.73	.025	.70	.77	DL8604	65

*Observations are of late-stage eggs unless noted otherwise.

Unknown #63 Taxon Code: 100 000 063 Dec 21, 1992

[tentative identification: *Lepophidium profundorum*]

Shape and size: Almost spherical, to noticeably oval (often partially collapsed)
.91-.95 (.88-.99) x .85-.92 (.81-.95)

Oil g: None
Egg membrane: Smooth, clear and colorless
Yolk: Homogeneous
Pv space: Narrow (normal)
Myomeres: Numerous (approx 50+)
Spawning: GOM: Aug
GB: May-Oct
SNE: May-Oct
MAB: May-Oct

Pigmentation and form: In general, virtually no melanophores present.

MIDDLE
la-Mid: No pigmentation

LATE
5/8 to full~: No pigmentation

1 1/8~: There may be (rarely) a couple of tiny melan on the post 1/2 of the embryo.

Unknown #63, observed sizes Aug 26, 1992

Summary: greater diam, .91-.95 (.88-.99)
lesser diam, .85-.92 (.81-.95)

		Greater diameter					Lesser diameter					
Area	Mon	Obs*	**Mean**	SD	Min	Max	**Mean**	SD	Min	Max	Cruise	Sta
GB	Aug	11	.95	.017	.91	.97	.92	.018	.90	.95	AL8507	305
GB	Sep	2	.91	.000	.91	.91	.85	.014	.84	.86	DL8607	110
GB	Sep	7	.94	.016	.93	.97	.91	.023	.88	.94	DL8607	126
GB s	Sep	7	.91	.017	.89	.92	.86	.023	.81	.89	DL8607	127
SNE	Oct	1m,2	.95	.048	.90	.99	.89	.058	.84	.95	DL8608	171
MA	Jul	11	.93	.018	.91	.96	.89	.014	.88	.91	AL8507	55
MA	Jul	9	.92	.024	.88	.95	.88	.010	.86	.90	AL8507	154
MA	Aug	1	.-	.-	.92	.92	.-	.-	.85	.85	DL8607	30

*Observations are of late-stage eggs unless noted otherwise.

Unknown #126 Taxon Code: 100 000 126 Jan 15, 1993

Shape and size:	Double membrane; outer diam .96 (.89-.99), inner .88 (.82-.92)
Oil g:	None
Egg membrane:	Double
Yolk:	Segmented
Pv space:	
Myomeres:	in 20's (normal)
Spawning:	GB; Oct SNE: Apr, Sep and Nov MAB: Jan, Mar, Jul-Sep, Nov SAB: Apr

Pigmentation:

MIDDLE
mid- to la-Mid: No pigmentation

LATE
1/2 to 5/8~: No pigmentation

Unknown #126, observed sizes

Summary: double membrane, outer diam .96 (.89-.99)
inner " .88 (.82-.92)

		Greater diameter					Lesser diameter					
Area	Mon	Obs*	**Mean**	SD	Min	Max	**Mean**	SD	Min	Max	Cruise	Sta
SN	Sep	1e	.-	.-	.97	.97	.-	.-	.84	.84	BE7903	26
SN off	Nov	1e	.-	.-	.89	.89	.-	.-	.82	.82	DL8510	63
MA	Jul	1	.-	.-	.96	.96	.-	.-	.84	.84	EV8006	45
MA	Aug	1e	.-	.-	.99	.99	.-	.-	.92	.92	BE7901	17
MA	Aug	1e	.-	.-	.92	.92	.-	.-	.88	.88	BE7901	34
MA	Jan	1e	.-	.-	.96	.96	.-	.-	.85	.85	DL8601	35
SA	Apr	2m	.96	.007	.96	.97	.88	.028	.86	.90	DL8503	137

*Observations are of late-stage eggs unless noted otherwise.

Unknown #127 Taxon Code: 100 000 127 Aug 17, 1992

Similar in size to Unk #63, *L. ferruginea* and *T. adspersus*; smaller than Unk #91; more pigment than Unk #63. Be wary of confusion with *L. ferruginea*, especially in area off NJ to MD during Jun and Jul.

Shape and size:	Spherical to slightly oval (often collapsed) greater diam .90-.97 (.89-1.00) lesser diam .90-.93 (.84-.97)
Oil g:	None
Egg membrane:	Smooth, clear and colorless
Yolk:	Homogeneous
Pv space:	Narrow
Myomeres:	Numerous (approx 40? post anus)
Spawning:	MAB: May-Sep; generally mid- and inner-shelf waters

Pigmentation:

LATE

ea-Late, 5/8~, not twisted to just twisting and finfold forming:

Tiny, punct, faint melan scatt dors and dors-lat from behind eyes or h-brain to about 95% BL; or, in 2 dors-lat rows in neural grooves over approx central ½ of body. Or, a combination of both configurations. Use a white background to see melan, they are tiny and faint. [In comparison, both *L. ferruginea* and *T. adspersus* have darker and more obvious pigment.]

3/4~: Anus at approx 2/3 BL. Melan very small, punct to slightly stell, faint and sparse, and occur from between eyes on head to ttip. Widely scatt on head and over h-brain; then post to ttip as sparse and faint double dors row (either side of ffold base). On post 1/10 body the dors rows break down and a few melan appear to be migrating lat and vent; a couple are into anal ffold.

7/8~: Tiny, punct melan (to slightly stell) sparsely scatt on head then post scatt over h-brain and abdomen, then post to ttip as loose (sparse and slightly sloppy) double series either side of ffold base; a few on post 1/10 body lat-vent and vent; often, a couple into vent ffold between anus and ttip. [Generally less melan than *L. ferruginea* and more scatt; not in single dors series as in *L. ferruginea*]

Full~ Anus at approx 1/2 BL; approx 40 myomeres post anus. Tiny, punct melan [smaller than on *L. ferruginea*]; melan dors but sparse on head, including over eyes; scatt dors and dors-lat over h-brain and abdomen then post as widely scatt dors-lat series [not mid-dors row as on L.f.]. Aside from a couple of isolated melan, vent melan form a row of <10 only on post 1/10 body [*L. ferruginea* has more vent melan and a longer series]. There are <5 melan in anal ffold midway from h-gut to ttip. None on yolk.

Unknown #127, observed sizes Jan 15, 1993

Summary: greater diam .90-.97 (.89-1.00), lesser .90-.93 (.84-.97)

		Greater diameter					Lesser diameter					
Area	Mon	Obs*	**Mean**	SD	Min	Max	**Mean**	SD	Min	Max	Cruise	Sta
MA	Jul	4	.-	.-	.95	.99	.-	.-	.92	.95	EV8006	14
MA	Jul	11	.95	.023	.92	.99	.92	.025	.89	.96	EV8006	15
MA	Jul	1	.-	.-	.95	.95	.-	.-	.92	.92	EV8006	39
MA	Jul	14	.97	.020	.93	1.00	.93	.027	.88	.97	AL8507	156
MA	Jul	1	.	.	.89	.89	.	.	.86	.86	AL8705	182
MA	Aug	1	.	.	.97	.97	.	.	.93	.93	AL8604	167
MA	Aug	2	.90	.007	.89	.90	.90	.007	.89	.90	DL8607	22
MA	Aug	1	.-	.-	.92	.92	.-	.-	.85	.85	DL8607	31
MA	Aug	3	.95	.011	.93	.95	.90	.019	.88	.91	DL8708	15
MA	Sep	5	.96	.035	.91	.99	.90	.043	.84	.95	DL8607	49

*Observations are of late-stage eggs unless noted otherwise.

Unknown #91 Taxon Code: 100 000 091 Dec 21, 1992

Shape and size: Almost spherical, slightly oval
(often collapsed)
1.01-1.03 (.99-1.10) x .97-.98 (.93-1.03)

Oil g: None
Egg membrane: Smooth, clear and colorless
Yolk: Homogeneous (a few eggs are slightly segmented)
Pv space: Narrow (normal)
Myomeres: "Numerous"
Spawning: GB: Jun, Aug, Oct
SNE: May-Jul, Sep, Oct
MAB: Mar-Oct
SAB: Aug

Pigmentation:

MIDDLE
mid-Middle: No pigmentation.

la-Middle: Several minute melan scattered on dors aspect of embryo, from h-brain post to about 2/3 BL.

LATE
5/8~: Tiny melan scatt on dors and dors-lat aspects of embryo, a couple on yolk next to embryo at mid-body.

7/8~: Numerous melan scatt on dors of head and h-brain, then scatt post dors and dors-lat; some vent postanally (but fewer than dorsally); may extend into anal ffold postanally. Yolk surface void except for a couple tight alongside abdomen.

Unknown #91, observed sizes Aug 24, 1992

Summary: greater diam 1.01-1.03 (.99-1.10), lesser .97-.98 (.93-1.03)

		Greater diameter					Lesser diameter					
Area	Mon	Obs*	**Mean**	SD	Min	Max	**Mean**	SD	Min	Max	Cruise	Sta
SNE	Sep	3	1.01	.019	.99	1.03	.97	.011	.95	.97	DL8607	64
MA s	Apr	1	.-	.-	1.04	1.04	.-	.-	1.02	1.02	DL8503	130
MA	Aug	3	1.02	.025	1.00	1.05	.98	.040	.93	1.01	DL7709	70
MA	Aug	1	.-	.-	1.03	1.03	.-	.-	.95	.95	DL8607	34
MA	Aug	12e	1.03	.040	.99	1.10	.98	.033	.93	1.03	DL8607	38
MA	Sep	10m	1.02	.024	.99	1.07	.97	.025	.93	1.01	DL8607	51
MA	Oct	1	.-	.-	1.07	1.07	.-	.-	1.03	1.03	AL7911	33

*Observations are of late-stage eggs unless noted otherwise.

Tautoga onitis Taxon Code: 170 282 601 Dec 10, 1992

Shape and size:	Spherical; .96-1.10 (.95-1.14)
Oil g:	None
Egg membrane:	Single, smooth, clear and colorless
Yolk:	Homogeneous
Pv space:	Narrow (normal)
Myomeres:	
Spawning:	GOM: Sep SNE: May-Sep MAB: Apr-Aug

Pigmentation and form:

Tautoga onitis, observed sizes May 12, 1992

Summary: .96-1.10 (.95-1.14)

		Egg diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Cruise	Sta
SN	May	13	1.06	.033	1.02	1.14	AL8504	86
SN	Jun	10	1.02	.018	.99	1.05	DL8003	75
MA	Apr	1m,3	1.10	.013	1.09	1.11	DL8503	117
MA	May	5	1.01	.021	.98	1.03	AL8504	108
MA	May	1m,5	.98	.022	.95	1.01	AL8504	128
MA n	May	4	1.08	.028	1.04	1.10	DL8704	161
MA	Jul	3	.98	.010	.97	.99	AL7906	37
SN	Aug	2	.96	.011	.95	.97	DL8708	74

* Observations are of late-stage eggs unless noted otherwise.

Pollachius virens Taxon Code: 148 010 501 Oct 4, 1994

Shape and size:	Spherical, .99-1.14 (.94-1.17)
Oil g:	None
Egg membrane:	Smooth, clear and colorless
Yolk:	Homogeneous
Pv space:	Narrow (normal)
Myomeres:	
Spawning:	GOM: Oct-Dec, Jan-Jun GB: Oct-Dec, Jan-May SNE: Oct-Dec, Jan-Apr MAB: Feb

Pigmentation and form:

Pollachius virens, observed sizes Oct 4, 1994

Summary: .99-1.14 (.94-1.17)

		Egg diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Cruise	Sta
GM	Nov	9	1.14	.023	1.11	1.16	AL8605	362
GM	Jan	10	1.01	.032	.96	1.05	DL8401	5
GM	Jan	10	.99	.030	.96	1.03	DL8401	35
GM w	Jan	10	1.11	.028	1.07	1.14	DL8501	4
GB	Jan	10	1.01	.031	.94	1.05	DL8401	74
SN	Jan	10	1.11	.029	1.08	1.15	DL9001	28
SN	Jan	10	1.13	.031	1.10	1.17	DL9301	42

* Observations are of late-stage eggs unless noted otherwise.

Unknown #211 Taxon Code: 100 000 211 Mar 31, 1993

[Synodontidae, type 1]

Shape and size:	Spherical, sculpted Outer, point-to-point diam 1.03-1.04 (.96-1.08) Inner, smooth diam .99-1.00 (.94-1.03)
Oil g:	None
Egg membrane:	Sculpted, hexagonal pattern [more prominent than in Unk #212]
Yolk:	Homogeneous
Pv space:	Narrow (normal)
Myomeres:	
Spawning:	SNE: Jul MAB: Feb, Mar, May and Jul-Sep SAB: Mar, Apr and Aug

Pigmentation:

Middle and ea-Late: No pigmentation.

LATE

3/4~: A few punct melan scatt on head and in 2 dors-lat rows, to 1/2 BL.

7/8~: Small dark melan from snout to 9/10 BL as 2 dors-lat rows (reminiscent of a lightly pigmented *T. onitis*).

1 1/8~: Dark punct melan widely scatt on head then lat on abdomen, then post to ttip as 2 dors-lat rows; a couple melan vent to ttip. None in ffold; none on yolk.

Unknown #211, observed sizes Mar 31, 1993

Summary: outer membrane diam (pt-to-pt) 1.03-1.04 (.96-1.08)
inner " " (smooth) .99-1.00 (.94-1.03)

		Greater diameter					Lesser diameter					
Area	Mon	Obs*	**Mean**	SD	Min	Max	**Mean**	SD	Min	Max	Cruise	Sta
MA s off	Sep	1	.-	.-	.96	.96	.-	.-	.94	.94	AL8707	19
SA s	Apr	2	1.04	.000	1.04	1.04	1.00	.007	.99	1.00	DL8503	136
SA s	Apr	4m,2	1.04	.032	.99	1.08	.99	.025	.95	1.03	DL8503	133
SA	Apr	4m,3	1.03	.024	.99	1.06	.99	.019	.95	1.01	DL8503	139

*Observations are of late-stage eggs unless noted otherwise.

Unknown #222 Taxon Code: 100 000 222 Mar 31, 1993

Shape and size:	Spherical, sculpted Outer, pt-to-pt diam 1.24 (1.22-1.25) Inner, smooth diam 1.18 (1.16-1.20)
Oil g:	None
Egg membrane:	Sculpted, hexagonal pattern
Yolk:	Homogeneous
Pv space:	Narrow (normal)
Myomeres:	numerous
Spawning:	SAB: Aug, offshore

Pigmentation:

LATE

1 1/4~: Dark melan scatt along outline of fore- and mid-brain, a few scatt melan on eyes. Dendritic melan scatt on lat and vent aspects of body. Prominent spot on vent; a patch of melan on developing caudal rays. None in ffold or on yolk.

[Differ from Unk #212 in that melan on body are dendritic, and not in two neat dors-lat rows as in Unk #212; and Unk #222 has more melan ventral than dorsal on body.]

Unknown #222, observed sizes

Summary: outer membrane (sculpt) diam 1.24 (1.22-1.25)
inner " (smooth) " 1.18 (1.16-1.20)

		Greater diameter					Lesser diameter					
Area	Mon	Obs*	**Mean**	SD	Min	Max	**Mean**	SD	Min	Max	Cruise	Sta
SA off	Aug	2	1.24	.021	1.22	1.25	1.18	.028	1.16	1.20	DL8507	16

*Observations are of late-stage eggs unless noted otherwise.

Clupea harengus Taxon Code: 121 050 601 Dec 9, 1992

Shape and size:	Spherical to slightly irregular (demersal egg) Diam, greater 1.29 (1.22-1.35) " , lesser 1.25 (1.20-1.33)
Oil g:	None
Egg membrane:	Smooth to rough, clear and colorless
Yolk:	Bright yellow and finely segmented, opaque
Pv space:	Wider than normal
Myomeres:	
Spawning:	GOM: Sep, Oct GB: Apr(?), Oct

Pigmentation and form:

LATE

7/8 to full~: Bright yellow yolk. Pigm just beginning in eyes; no other melan. No finfold yet.

1 1/8~: Pigm in eyes is increasing, but not dark yet.

1 1/4 to 1 1/2~: Finfold forming; no gut yet. Pigm in eyes getting darker; no other melan yet.

1 3/4 to 2~: Gut forming; it extends from yolk back to approx 9/10 BL. Eyes well pigm now. Melan on ventrum of body may or may not begin by this stage; this varies, beginning in some at 1 1/2~ and in others not until twice around.

2 1/8 to 2 1/2~: Yolk reduced in volume. Eyes very darkly pigm; melan along gut dorsal to gut on anterior 1/3 of gut, ventral to gut on posterior 2/3. At 2 1/2~ a few melan present at tip of notocord, mostly ventral but with a couple dorsal to notocord tip in some.

Clupea harengus, observed sizes

Summary: greater diam 1.29 (1.22-1.35), lesser 1.25 (1.20-1.33)

		Greater diameter					Lesser diameter					
Area	Mon	Obs*	**Mean**	SD	Min	Max	**Mean**	SD	Min	Max	Cruise	Sta
GOM e	Sep	10	1.29	.039	1.22	1.35	1.25	.037	1.20	1.33	DL8607	146

*Observations are of late-stage eggs unless noted otherwise.

Glyptocephalus cynoglossus Taxon Code: 183 021 301 Dec 9, 1992

Shape and size:	Spherical, 1.27-1.34 (1.10-1.44)
Oil g:	None
Egg membrane:	Smooth, clear and colorless
Yolk:	Homogeneous
Pv space:	Narrow (normal)
Myomeres:	
Spawning:	GOM: May-Oct GB: Apr-Oct SNE: Mar-Aug MAB: Feb-Jul

Pigmentation and form:

Glyptocephalus cynoglossus, observed sizes Oct 4, 1994

Summary: 1.27-1.34 (1.10-1.44)

		Egg diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Cruise	Sta
GM	Sep	12	1.27	.036	1.22	1.33	DL8708	176
SN	Apr	4	1.27	.020	1.25	1.30	AL8701	132
SN	May	3	1.32	.071	1.24	1.37	DL7905	66
SN	May	8	1.34	.073	1.25	1.44	DL7905	81
SN	May	17	1.27	.062	1.10	1.37	DL7905	92
MA s off	May	10	1.27	.045	1.22	1.36	AL9305	6

* Observations are of late-stage eggs unless noted otherwise.

Melanogrammus aeglefinus Taxon Code: 148 010 401 Oct 4, 1994

Shape and size: Spherical, 1.28-1.50 (1.22-1.61)

Oil g: None
Egg membrane: Smooth, clear and colorless
Yolk: Homogeneous
Pv space: Narrow (normal)
Myomeres:
Spawning: GOM: Jan-Jun, Aug
GB: Jan-Aug
SNE: Jan-May
MAB: Mar

Pigmentation and form:

Melanogrammus aeglefinus, observed sizes Oct 4, 1994
Summary: 1.28-1.50 (1.22-1.61)

		Egg diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Cruise	Sta
GM ne	Apr	9	1.46	.033	1.41	1.50	AL8701	286
GB	Jan	10	1.47	.059	1.32	1.51	DL9110	25
GB	Feb	10	1.48	.059	1.39	1.55	DL9103	106
GB	Feb	10	1.50	.060	1.42	1.61	AL9303	119
GB	Mar	10	1.31	.029	1.29	1.37	AL8402	257
GB	Mar	10	1.33	.049	1.27	1.48	AL8402	295
GB	Mar	10	1.47	.053	1.39	1.47	AL8802	200
GB	Mar	10	1.46	.037	1.42	1.51	DL9105	217
GB	Mar	10	1.45	.055	1.35	1.53	DL9105	219
GB	Apr	16	1.48	.054	1.37	1.60	AL8003	6
GB	Apr	10	1.31	.047	1.25	1.40	AL8402	303
GB	Apr	10	1.28	.039	1.24	1.37	AL8402	306
GB	Apr	10	1.28	.035	1.22	1.31	AL8402	308
GB	Apr	8	1.49	.048	1.41	1.57	DL8503	11
GB	Apr	14	1.44	.060	1.28	1.52	DL8503	23
GB	Apr	34	1.45	.060	1.33	1.57	AL8701	225
GB	Apr	10	1.40	.046	1.35	1.50	DL9004	260
GB	Apr	10	1.46	.043	1.35	1.51	AL9203	223
GB	Apr	10	1.44	.056	1.32	1.51	AL9203	234
GB	Apr	10	1.40	.052	1.29	1.45	AL9203	235
GB	Apr	10	1.42	.063	1.39	1.58	AL9304	218
GB	Apr	10	1.43	.043	1.39	1.51	AL9304	224
GB	Apr	10	1.46	.037	1.42	1.51	AL9304	250
SN	Mar	10	1.29	.032	1.25	1.37	AL8402	214
SN	Mar	10	1.36	.054	1.25	1.42	AL8402	230
SN	Apr	10	1.42	.051	1.32	1.51	AL9304	209

* Observations are of late-stage eggs unless noted otherwise.

Gadus morhua Taxon Code: 148 010 301 Oct 3, 1994

Shape and size: Spherical, 1.30-1.49 (1.20-1.64)

Oil g: None
Egg membrane: Smooth, clear and colorless
Yolk: Homogeneous
Pv space: Narrow (normal)
Myomeres:
Spawning: GOM: Jan-Dec
GB: Jan-Dec
SNE: Oct-Dec, Jan-Jul
MAB: Sep, Dec, Feb-May
SAB: Apr (identification OK!)

Pigmentation and form:

Gadus morhua, observed sizes Oct 4, 1994

Summary: 1.30-1.49 (1.20-1.64)

		Egg diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Cruise	Sta
GM	Nov	9	1.37	.053	1.27	1.44	AL8605	362
GB	Nov	10	1.36	.029	1.31	1.40	DL8909	76
GB	Dec	10	1.37	.048	1.29	1.46	DL8710	105
GB	Dec	10	1.37	.039	1.31	1.39	DL8909	105
GB	Dec	10	1.33	.041	1.28	1.40	DL9014	71
GB	Dec	10	1.35	.044	1.28	1.42	DL9014	85
GB	Dec	10	1.33	.026	1.29	1.39	DL9014	123
GB	Dec	10	1.32	.071	1.24	1.50	DL9214	76
GB	Dec	10	1.35	.061	1.27	1.45	DL9214	78
GB	Dec	10	1.39	.047	1.28	1.44	DL9214	81
GB	Dec	10	1.37	.048	1.33	1.48	DL9214	86
GB	Dec	10	1.34	.069	1.27	1.50	DL9214	89
GB	Jan	10	1.39	.064	1.28	1.50	DL9001	66
GB	Jan	10	1.45	.084	1.28	1.57	DL9001	101
GB	Jan	10	1.43	.070	1.31	1.53	DL9001	119
GB	Jan	10	1.46	.039	1.42	1.51	DL9110	17
GB	Jan	10	1.46	.063	1.35	1.58	DL9110	25
GB	Jan	10	1.49	.063	1.42	1.64	DL9110	36
GB	Jan	10	1.39	.042	1.33	1.48	DL9301	86
GB	Jan	10	1.41	.080	1.30	1.55	DL9301	92
GB	Jan	10	1.43	.041	1.38	1.51	DL9301	104
GB	Feb	10	1.43	.054	1.31	1.50	DL9003	64
GB	Feb	10	1.47	.032	1.42	1.51	DL9003	72
GB	Feb	10	1.49	.038	1.42	1.53	DL9103	106
GB	Feb	10	1.47	.069	1.39	1.58	AL9303	119
GB	Mar	10	1.32	.053	1.22	1.40	AL8402	257

GB	Mar	10	1.43	.046	1.35	1.50	AL8802	190
GB	Mar	10	1.43	.047	1.35	1.50	AL8802	200
GB	Mar	10	1.38	.063	1.28	1.46	DL9004	203
GB	Mar	10	1.48	.078	1.31	1.57	DL9105	219
GB	Apr	16	1.44	.063	1.34	1.56	AL8003	6
GB	Apr	6	1.46	.084	1.34	1.59	DL8503	11
GB	Apr	10	1.30	.062	1.22	1.42	AL8402	293
GB	Apr	10	1.32	.046	1.24	1.38	AL8402	303
GB	Apr	10	1.37	.042	1.27	1.40	AL8402	306
GB	Apr	17	1.42	.058	1.34	1.56	AL8701	225
GB	Apr	10	1.40	.040	1.31	1.48	DL9004	260
GB	Apr	10	1.42	.071	1.31	1.53	DL9004	269
GB	Apr	10	1.38	.056	1.29	1.45	AL9203	220
GB	Apr	10	1.42	.072	1.32	1.58	AL9203	223
GB	Apr	10	1.36	.054	1.29	1.48	AL9203	235
GB	Apr	10	1.42	.097	1.26	1.58	AL9304	196
GB	Apr	10	1.45	.063	1.39	1.54	AL9304	218
GB	Apr	10	1.40	.091	1.20	1.48	AL9304	250
SN	Nov	10	1.35	.064	1.28	1.46	DL8909	13
SN	Nov	10	1.33	.061	1.20	1.39	DL9014	3
SN	Jan	10	1.37	.041	1.33	1.44	DL9001	15
SN	Jan	10	1.37	.055	1.31	1.50	DL9001	171
SN	Jan	10	1.34	.079	1.28	1.53	DL9001	176
SN	Jan	10	1.31	.072	1.11	1.42	DL9101	11
SN	Jan	10	1.37	.062	1.28	1.48	DL9101	32
SN in	Jan	10	1.39	.059	1.31	1.50	DL9301	11
SN	Jan	10	1.36	.046	1.27	1.42	DL9301	32
SN	Feb	10	1.35	.063	1.24	1.42	DL9103	15

* Observations are of late-stage eggs unless noted otherwise.

Unknown #212 Taxon Code: 100 000 212 Mar 31, 1993

[Synodontidae, type 2]

Shape and size:	Spherical, sculpted Outer, pt-to-pt diam 1.30-1.32 (1.18-1.39) Inner, smooth diam 1.27-1.30 (1.21-1.37)
Oil g:	None
Egg membrane:	Sculpted, hexagonal pattern [less prominent than in Unk #211]
Yolk:	Homogeneous
Pv space:	Narrow (normal)
Myomeres:	"numerous"
Spawning:	MAB: Apr, May, Aug-Nov SAB: Mar, Apr, Aug

Pigmentation:

MIDDLE
ea-Mid through la-Mid: No pigmentation.

LATE
ea-Late, 9/16~: A few punct melan on dors-lat aspect, abdomen to 1/2 BL.

3/4~: Fine punct melan in 2 dors-lat rows from top of head to ttip, becoming smaller posteriad (and more numerous than in Unk #211). Tail not yet twisted.

7/8~: As at 3/4~, plus a few fine ventral melan on post 1/5 body and a couple ventral melan along gut.

full~: Same but darker. Dors-lat rows head to ttip; melan smaller and more numerous at tail end; a few ventral melan on post 1/4 body. Those at ttip migrating into ffold on the beginning fin rays of caudal fin.
[Differs from Unk #222 in that pigm on Unk #212 is punct, with more pigm dors than vent. and melan tend to form 2 dors-lat rows.]

1 1/8~: Eye pigment forming; scatt dark melan on head, abdomen and body (not 2 dors-lat rows anymore); ventral post-anus series still a row; those in caudal ffold more striking now as they migrate into ffold.

Unknown #212, observed sizes Mar 31, 1993

Summary: outer membrane diam (sculpted) 1.30-1.32 (1.18-1.39)
inner " " (smooth) 1.27-1.30 (1.20-1.37)

		Greater diameter					Lesser diameter					
Area	Mon	Obs*	**Mean**	SD	Min	Max	**Mean**	SD	Min	Max	Cruise	Sta
MA s	Apr	9	1.32	.032	1.30	1.39	1.30	.028	1.28	1.37	DL8503	136
MA s	Apr	1	.-	.-	1.30	1.30	.-	.-	1.28	1.28	DL8503	131
MA s	Apr	1	.-	.-	1.31	1.31	.-	.-	1.28	1.28	DL8503	133
MA s off	May	10	1.31	.038	1.24	1.37	1.27	.038	1.20	1.33	DL8603	2
MA s off	May	2	1.32	.039	1.25	1.29	1.27	.026	1.25	1.29	DL8603	6
MA s	May	1	.-	.-	1.29	1.29	.-	.-	1.27	1.27	DL8603	8
MA off	May	1	.-	.-	1.37	1.37	.-	.-	1.33	1.33	DL8603	11
SA	Apr	2m,4	1.30	.047	1.25	1.36	1.27	.046	1.21	1.33	DL8503	142
SA	Aug	1	.-	.-	1.18	1.18	.-	.-	.-	.-	DL8507	4

*Observations are of late-stage eggs unless noted otherwise.

Unknown #214 Taxon Code: 100 000 214 Mar 31, 1993

Shape and size: Spherical, (1.41)

Oil g: None
Egg membrane: Smooth, clear and colorless
Yolk: Homogeneous
Pv space: Narrow (normal)
Myomeres: approx 30
Spawning: SAB: (Cape Hatteras), Apr, offshore

Pigmentation and form:

LATE
7/8~: Large broad head; heavy-bodied chunky embryo; large, fan-like pectoral fins; h-gut (vent) at approx 1/2 BL. Lightly pigmented; melan small (punct to slightly dend), scatt sparsely over head, body (dors, lat and vent), and on h-gut; couple in dors and anal ffold at approx 2/3 BL; large pect fins peppered with melan along developing rays; yolk ventrum with scatt melan; eyes just beginning to be pigm.

Unknown #214, observed sizes Mar 31, 1993

Summary: (1.41)

		Egg diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Cruise	Sta
SA s	Apr	1	.-	.-	1.41	1.41	DL8503	136

* Observations are of late-stage eggs unless noted otherwise.

Anchoa hepsetus Taxon Code: 121 060 101 Dec 4, 1992

Shape and size:	Non-spherical; Greater diam 1.50-1.63 (1.34-1.76) Lesser diam .78-.87 (.73-.92)
Oil g:	None
Egg membrane:	Smooth, clear and colorless
Yolk:	Segmented
Pv space:	Narrow (normal)
Myomeres:	
Spawning:	SNE: Jul, Aug MAB: Apr-Sep SAB: Apr

Pigmentation and form:

No pigmentation at any stage.

Anchoa hepsetus, observed sizes Jun 26, 1989

Summary: greater diam: 1.50-1.63 (1.34-1.76), lesser .78-.87 (.73-.92)

		Greater diameter					Lesser diameter					
Area	Mon	Obs*	**Mean**	SD	Min	Max	**Mean**	SD	Min	Max	Cruise	Sta
MA	May	11	1.50	.080	1.34	1.63	.78	.030	.73	.83	DL8003	2
MA	May	10	1.63	.059	1.53	1.72	.85	.031	.79	.88	DL8003	9
MA	May	10	1.62	.089	1.48	1.76	.87	.031	.82	.92	DL8003	17
MA n	Jun	10	1.58	.076	1.46	1.66	.81	.039	.76	.89	DL8604	65

*Observations are of late-stage eggs unless noted otherwise.

Unknown #125 Taxon Code: 100 000 125 Mar 31, 1993

Shape and size: Spherical; double membrane
Outer diam; 1.64-1.72 (1.51-1.79)
Inner diam; 1.60-1.68 (1.48-1.73)

Oil g: None
Egg membrane: Smooth; copper tint; double membrane
Yolk: Segmented
Pv space: Wide
Myomeres:
Spawning: SNE: Sep-Dec

Pigmentation and form:

LATE
1 1/4~: No pigmentation. Vent is at 7/8 BL; well developed ffold.

Unknown #125, observed sizes Oct 3, 1994

Summary: Outer diam 1.64-1.72 (1.51-1.79)
Inner diam 1.60-1.68 (1.48-1.73)

		Outer diameter					Inner diameter					
Area	Mon	Obs*	**Mean**	SD	Min	Max	**Mean**	SD	Min	Max	Cruise	Sta
SN off	Sep	1m	.	.	1.73	1.73	.	.	1.70	1.70	DL8507	85
SN off	Sep	1e	.	.	1.73	1.73	.	.	1.70	1.70	DL8507	100
SN off	Sep	4e,4	1.72	.047	1.66	1.79	1.68	.041	1.62	1.73	DL8607	97
SN off	Sep	1e	.	.	1.66	1.66	.	.	1.60	1.60	DL9110	107
SN off	Oct	1	.	.	1.70	1.70	.	.	1.66	1.66	DL8508	111
SN off	Oct	1	.	.	1.73	1.73	.	.	.	.	DL8508	114
SN off	Oct	1	.	.	1.75	1.75	.	.	1.72	1.72	DL8508	159
SN off	Oct	1e,1m,1	1.67	.046	1.62	1.72	1.61	.055	1.55	1.66	DL8508	163
SN off	Nov	1e,1m	1.64	.026	1.62	1.66	1.60	.014	1.59	1.61	DL8510	65
SN off	Nov	1	.	.	1.51	1.51	.	.	1.48	1.48	DL8510	83
SN off	Nov	1	.	.	1.70	1.70	.	.	1.66	1.66	DL8610	65
SN	Nov	1	.	.	1.70	1.70	.	.	1.66	1.66	DL8610	82
SN off	Nov	6e	1.71	.040	1.66	1.75	.	.	.	.	DL8610	83
SN	Nov	2e	1.68	.026	1.66	1.70	1.64	.026	1.62	1.66	DL8610	85
SN off	Nov	1e	.	.	1.72	1.72	.	.	1.68	1.68	DL8710	50
SN off	Nov	1e	.	.	1.73	1.73	.	.	.	.	DL8710	68

*Observations are of late-stage eggs unless noted otherwise.

Unknown #175 Taxon Code: 100 000 175 Jan 19, 1993

Shape and size: Spherical; double membrane
outer 1.84 (1.80-1.91), inner 1.72 (1.71-1.77)

Oil g: None
Egg membrane: Double
Yolk: Homogeneous
Pv space:
Myomeres: approx 97
Spawning: SNE: Oct
MAB: Mar, Jul and Aug
SAB: Apr

Pigmentation and form:

Late: Distinctive long bifurcated h-gut.

1 1/2~: Melan scatt on yolk; double row of faint and punct melan along vent aspect of body; melan along vent portion of gut; scatt melan on eyes (ant and post-lat), more melan on posterior portion of eyes.

Unknown #175, observed sizes Oct 5, 1989

Summary: double membrane, outer 1.84 (1.80-1.91)
inner 1.72 (1.71-1.77)

		Greater diameter					Lesser diameter					
Area	Mon	Obs*	**Mean**	SD	Min	Max	**Mean**	SD	Min	Max	Cruise	Sta
MA	Mar	1	.-	.-	1.88	1.88	.-	.-	1.77	1.77	AL8602	59
MA so	Jul	1e,1	1.84	.064	1.80	1.89	1.72	.007	1.72	1.73	EV8006	2
MA s	Aug	1	.-	.-	1.91	1.91	.-	.-	1.77	1.77	BE7901	1
MA s	Aug	1	.-	.-	1.81	1.81	.-	.-	1.73	1.73	DL8507	4
MA s off	Aug	1	.-	.-	1.81	1.81	.-	.-	1.71	1.71	DL8708	2

*Observations are of late-stage eggs unless noted otherwise.

Unknown #228 Taxon Code: 100 000 228 Sep 24, 1992

Shape and size: Spherical (almost); .83 (.80-.84)
some slightly oval, some slightly collapsed

Oil g: Single; (<.23, exp)
Egg membrane: Single, smooth, clear and colorless
Yolk: Homogeneous
Pv space: Narrow (normal)
Myomeres:
Spawning: MAB: Jan (central, offshore)

Pigmentation and form:

MIDDLE

ea- to mid-Mid: Melan small and dark; occur on embryo and yolk (possibly on oil g, not sure due to ruptured condition of these oil g's). Melan scatt on head, generally along neural grooves; a couple lat, post to eyes; tend to be in dors-lat rows over h-brain with a couple scatt directly dorsally; then post tending to be in 2 dors-lat rows to approx 9/10 BL; a few vent-lat melan on post 1/2 body. A few on yolk, which tend to be lat to post 1/2 body and near oil g. A relatively narrow embryo.

Unknown #228, observed sizes Jul 19, 1989

Summary: .83 (.80-.84), og (<.23, exp)

		Egg diameter					Oil globule diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Obs	**Mean**	SD	Min	Max	Cruise	Sta
MA c off	Jan	10m	.83	.012	.80	.84	10	.-	.-	<.23	<.23	DL8601	46

* Observations are of late-stage eggs unless noted otherwise.

Unknown #113 Taxon Code: 100 000 113 Dec 21, 1992

Shape and size: Spherical; (2.14-2.30)

Oil g: None
Egg membrane:
Yolk: Segmented
Pv space:
Myomeres:
Spawning: MAB: Mar, Sep and Nov (south of Chesapeake Bay, offshore)

Pigmentation:

No notes on pigmentation (yet).

Unknown #113, observed sizes

Summary: (2.14-2.3)

		Egg diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Cruise	Sta
MA	Sep	1e	.-	.-	2.30	2.30	DL8106	15
MA s	Nov	1e	.-	.-	2.14	2.14	DL8510	6

* Observations are of late-stage eggs unless noted otherwise.

Hippoglossoides platessoides Taxon Code: 183 020 201 Oct 3, 1994

Shape and size:	Spherical, 2.06-2.38 (1.80-2.67)
Oil g:	None
Egg membrane:	Smooth, clear and colorless
Yolk:	Homogeneous
Pv space:	Wide
Myomeres:	
Spawning:	GOM: Jan-Dec GB: Jan-Jun, Dec SNE: Feb-May

Pigmentation and form:

Hippoglossoides platessoides, observed sizes Oct 4, 1994

Summary: 2.06-2.38 (1.80-2.67)

		Egg diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Cruise	Sta
GM w in	Apr	9	2.38	.191	2.05	2.67	DL8703	300
GM w in	Apr	1m,9	2.32	.098	2.06	2.41	DL8703	307
GM w in	Apr	10	2.24	.154	1.95	2.44	AL8802	304
GM w in	Apr	10	2.06	.123	1.90	2.24	DL9105	268
GM w	Apr	10	2.22	.082	2.14	2.43	AL9203	305
GM w in	Apr	10	2.17	.086	2.05	2.30	AL9304	260
GM	May	10	2.21	.102	2.06	2.43	DL7905	169
GM	May	12	2.29	.126	2.05	2.44	DL8002	3
GM	May	12	2.31	.116	2.05	2.48	DL8002	4
GM	Jun	10	2.17	.165	1.91	2.43	DL8003	93
GB	Apr	3	2.23	.217	1.99	2.39	DL8503	11
GB	Apr	2e,4m,5	2.33	.101	2.22	2.55	DL8503	27
GB	Apr	6	2.18	.111	2.10	2.38	AL8701	228
GB e	Apr	5	2.29	.110	2.17	2.41	AL8701	258
GB	Apr	10	2.24	.119	2.06	2.44	DL9004	262
GB	Apr	8	2.13	.077	2.02	2.21	AL9203	225
GB	Apr	10	2.17	.168	1.80	2.39	AL9203	235
GB	Apr	10	2.17	.161	2.02	2.46	AL9304	250

* Observations are of late-stage eggs unless noted otherwise.

Zu cristatus Taxon Code: 153 030 301 Dec 21, 1992

Shape and size:

Oil g:
Egg membrane:
Yolk:
Pv space:
Myomeres:
Spawning: GB: May

Pigmentation and form:

Zu cristatus, observed sizes Jun 26, 1989

Summary: (2.30)

		Egg diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Cruise	Sta
GB	May	1	.-	.-	2.30	2.30	DL8203	4

* Observations are of late-stage eggs unless noted otherwise.

Unknown #229 Taxon Code: 100 000 229 Mar 31, 1993

[tentative identification: *Scomberesox saurus*]

Shape and size:	Spherical, (2.40-2.57)
Oil g:	None
Egg membrane:	Finely sculpted, similar to, but slightly more coarse than in Uranoscopidae; slightly sticky; this egg floats.
Yolk:	Homogeneous
Pv space:	Narrow (normal); approx 0.2 all around
Myomeres:	Not counted, but obviously numerous (60 or 70).
Spawning:	SNE: Nov, offshore, south from Long Island and in Hudson Canyon

Pigmentation and form:

LATE

5/8~: This egg floats, the surface has debris clinging to it. Tail twisted and flexed; the "caudal fin" bud is rounded (precursor to the shape of the 3/4~ stage). Finfold approx 1/4 BD, at post-anus location. Anus at about 8/10 BL. Head is strikingly broad, with large eyes and no snout; body is narrow and has many myomeres; pect buds are well formed. Yolk pigmentation is striking; there are two large areas of evenly scatt dark and dend melan on the ant-dors surface, near head and abdomen. On the embryo there are a few melan on the head dorsum, over the eyes and mid-brain lobes; then extending post first as longitudinal swaths lat to the h-brain and pect area, then becoming dors-lat and gradually diminishing and ending at about 2/3 BL. Also, there are a couple melan dors-lat on either side of caudal peduncle, at about 90% BL. There appear to be internal melan near the h-gut; probably more obvious at earlier stages.

3/4~: Anus at approx .65 to .70 BL; ffold narrow and appears absent at caudal peduncle. Caudal development seems advanced -- it is dorsally and ventrally broadened and surrounded by ffold, sort of a round and ping-pong-paddle shape caudal fin. Head shape is striking; it is blunt (almost no snout) with large eyes. Pectoral fin buds present. Pigment on yolk is striking; there are patches of dend and coarsely spaced melan on either side of head and abdomen occupying approx 1/3 of yolk surface; none elsewhere on yolk. On the embryo pigmentation is restricted to the anterior 1/2. There are a few melan scatt dorsally on head between eyes, then dors-lat and lat to h-brain, then diminishing and stopping at approx 1/2 BL. Egg surface sticky, with debris; the egg floats.

Unknown #229, observed sizes Mar 31, 1993

Summary: (2.40-2.57)

		Egg diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Cruise	Sta
SN w off	Nov	1	.-	.-	2.57	2.57	DL8510	64
SN w off	Nov	1	.-	.-	2.40	2.40	DL8610	62

* Observations are of late-stage eggs unless noted otherwise.

Unknown #195 Taxon Code: 100 000 195 Mar 31, 1993

[tentative identification: Exocoetidae]

Shape and size:	Spherical; (3.10-3.11)
Oil g:	None
Egg membrane:	Smooth, clear and colorless
Yolk:	Homogeneous
Pv space:	Narrow (normal)
Myomeres:	approx 40, approx 17 post-anus
Spawning:	MAB: Mar offshore SAB: Apr offshore

Pigmentation and form:

LATE

5/8+~: Quite advanced, caudal rays forming, anal and dorsal fin basal elements forming, large pect fins (no rays), pelvic fins, pigm just starting in eyes. Myomeres count post-anus 17 (2), total = 40 or so; dors fin = 13 or 14 elements, anal fin = 12 or 13 elements; caudal rays = 10 rays forming. Melan very fine and punct and numerous; scatt on post 1/2 head dors, then post as 2 dors-lat swaths of fine, dense melan dwindling to 2 dors-lat rows which terminate at approx 2/3 BL under dorsal fin origin; also a couple of fine punct melan on dors of caudal peduncle.

Unknown #195, observed sizes

Summary: (3.10-3.11)

		Egg diameter						
Area	Mon	Obs*	**Mean**	SD	Min	Max	Cruise	Sta
MA off	Mar	1	.-	.-	3.10	3.10	AL8202	112
SA off	Apr	1	.-	.-	3.11	3.11	DL8503	138

* Observations are of late-stage eggs unless noted otherwise.

Multiple Oil Globules (listed by size) Oct 3, 1994

Measurements for egg chorion and oil globule diameters were made to the nearest 0.01 millimeter. Sizes within parentheses represent minimum and maximum values observed.

Symphurus spp. .57-.64 (.54-.66); og no. 7.4 (5-11); og diam .06 (.05-.07).

Unk #99: .62 (.59-.70); og no. (7-14); og diam (.04-.08); no pigm at 5/8~; light dors pigm on embryo and melan in dors and anal finfolds at full~; membrane may have reddish tint.

Trinectes maculatus (.70-.79); og no. (15-20); og diam [no info].

Unk #95: .74 (.72-.88); og no. (15-20); og diam [no info]; punct melan scatt dors and lat snout to tailtip; scatt on yolk.

Unk #193: (.77); og no. (approx 35); og diam [no info]; pigm info lacking.

Unk #186: (.79); og no. [no info]; og diam [no info]; "lots of pigm on embryo".

Unk #227: (.93-.96); og no. (15-20); og diam (.04-.07); One vent. Melan at 9/10 BL.

Prionotus sp: .93-1.08(.87-1.16); og no. 11-15(6-25); og diam .08-.13(.04-.18) chorion often with red tint; dend (filmy and faint) melan on embryo, yolk, and patches in dors and anal finfold.

Unk #198: (1.10); og no. [no info]; og diam [no info]; wide perivitelline space; egg membrane with internal pustules; punct melan on dors, a few vent; sparsely scatt on yolk.

Sarda sarda 1.19-1.26 (1.18-1.37); og no. (2-10); og diam (max=.27); perhaps og is single but broken; punct melan.

Unk #181: (1.40-1.50); og no. [no info]; og diam [no info]; pigm info lacking.

Unk #213: 1.47 (1.42-1.52); og no. (10-15); og diam (.10-.15); darkly pigm areas on head and striking band at about 2/3 BL; yolk densely pigm; pect buds pigm. (Soleidae?)

Unk #86: (2.70); og no. [no info]; og diam (approx .05); no pigmentation (?).

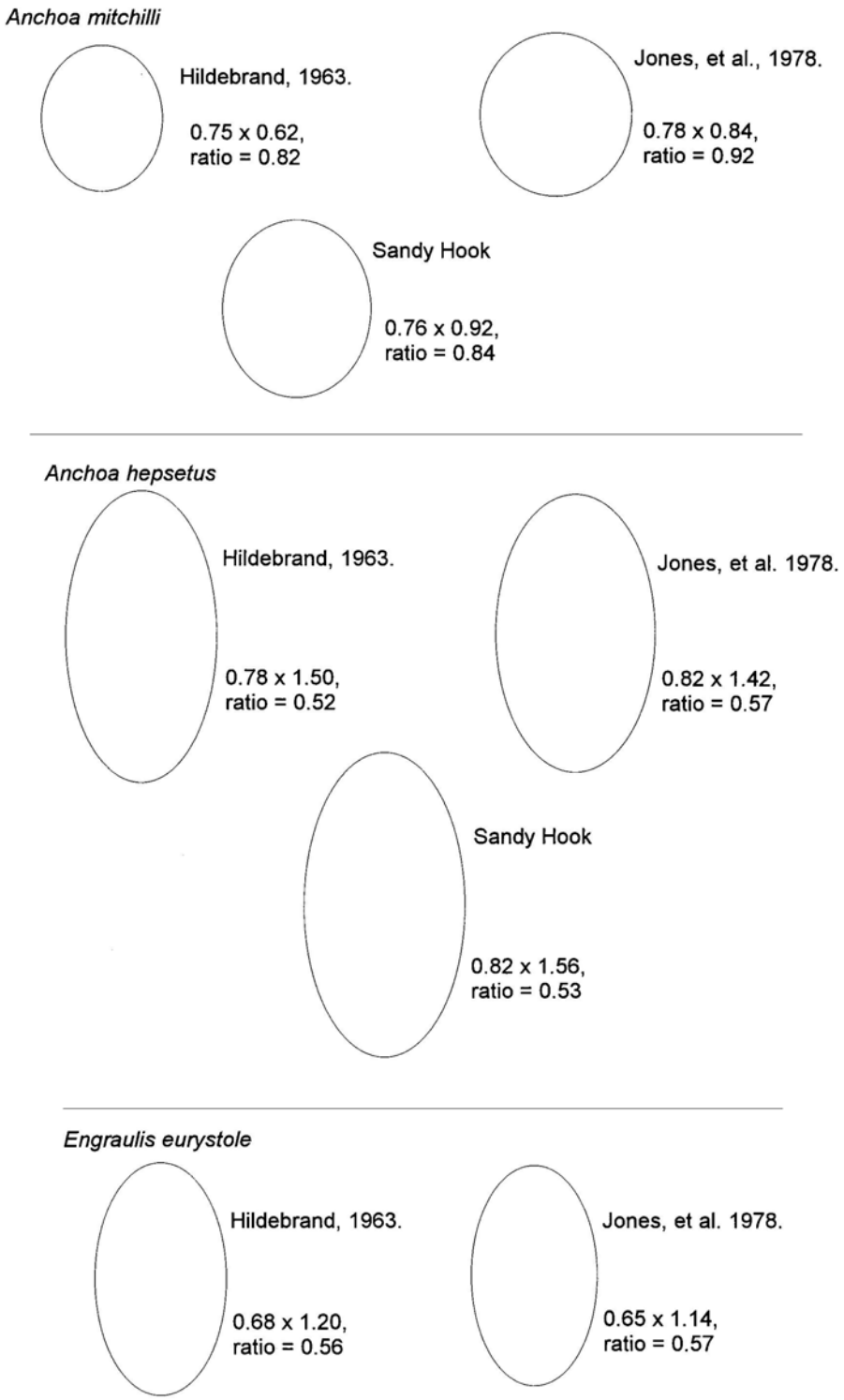


Figure 1. Comparison of anchovy egg shapes for *Anchoa mitchilli*, *Anchoa hepsetus* and *Engraulis eurostole*.

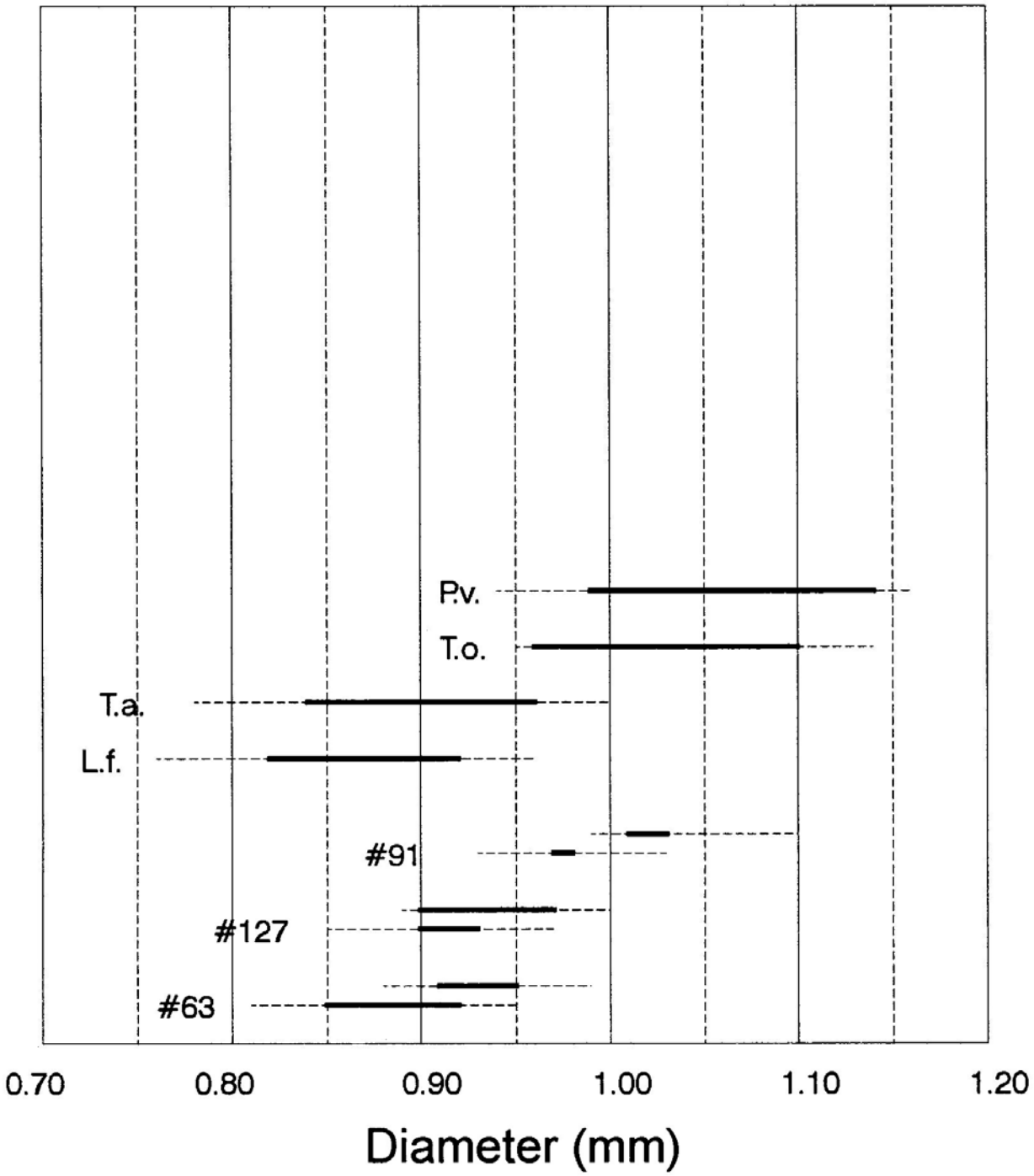


Figure 2. Comparisons of egg diameters for *Pollachius virens*, *Tautogolabrus onitis*, *Tautogolabrus adspersus*, *Limanda ferruginea*, Unknown #91, Unknown #127 and Unknown #63.

***Symphurus* spp.** Taxon Code: 183 050 700 Mar 31, 1993

[tentative identification: *S. plagiusa*, see Olney and Grant 1976]

Shape and size: Spherical; .57-.64 (.54-.66)

Oil g: Multiple;
no. per egg; 7.4 (5-11)
diameter; .06 (.05-.07)

Egg membrane: Single, smooth, clear and colorless
Yolk: Homogeneous
Pv space: Narrow (normal)
Myomeres:
Spawning: MAB: Feb, May-Sep

Pigmentation and form:

MIDDLE

la-Mid: A few tiny, punct and faint melan scatt on dors of embryo from behind eyes to about 1/2 to 2/3 BL. None on yolk.

LATE

ea-Late, 9/16~: Tiny punct and faint melan scatt on dorsum of embryo from behind eyes to 2/3 to 7/8 BL, increasing in density and coverage with development. None on yolk or associated with oil g's.

9/16-5/8~, tail twisting: Tiny punct melan (slightly darker now) scatt dors and dors-lat from m-brain to 9/10 BL, most dense on middle 1/2 of body. None on yolk or associated with oil g's.

Symphurus spp., observed sizes

Summary: egg diameter: .57-.64 (.54-.66)
oil globule number per egg: 7.4 (5-11)
oil globule diam: .06 (.05-.07)

		Egg diameter					Oil globule no.					Oil globule diam						
Area	Mon	Obs[1]	**Mean**	SD	Min	Max	Obs[2]	**Mean**	SD	Min	Max	Obs[3]	**Mean**	SD	Min	Max	Cruise	sta
MA	May	3	.-	.-	.61	.65	-	.-	.-	7	10	-	.-	.-	.-	.-	DL8003	3
MA	May	7	.64	.015	.63	.66	-	.-	.-	-	-	-	.-	.-	.-	.-	DL8603	8
MA	Jun	10m	.61	.017	.59	.64	-	.-	.-	-	-	-	.-	.-	.-	.-	AL7906	3
MA in	Jun	20m	.64	.023	.59	.66	-	.-	.-	-	-	-	.-	.-	.-	.-	DL8604	124
MA	Jul	2m,1	.61	.-	.60	.63	-	.-	.-	7	10	-	.-	.-	.-	.-	EV8006	4
MA	Aug	4	.58	.013	.56	.59	-	.-	.-	-	-	-	.-	.-	.-	.-	BE7901	1
MA s	Aug	15	.57	.011	.54	.59	11	7.4	1.75	5	11	17	.06	.009	.05	.07	DL8708	3

[1]Refers to number of late-stage eggs unless noted otherwise.
[2]Refers to number of eggs in which oil globules were counted.
[3]Refers to number of oil globules measured, in 1 or more eggs.

Unknown #99 Taxon Code: 100 000 099 Apr 1, 1993

Shape and size: Spherical; .62 (.59-.70)

Oil g: Multiple;
no. per egg; (7-14)
diameter; (.04-.08)

Egg membrane: Single, smooth, clear and colorless or with red tint.
Yolk: Homogeneous
Pv space: Narrow (normal)
Myomeres:
Spawning: GOM: Sep, Oct
GB: May, Oct offshore
SNE: Mar, Jun-Dec
MAB: Mar, May, Jun, Aug-Nov
SAB: Apr

Pigmentation and form:

MIDDLE
mid- & la-Mid: No pigmentation.

LATE
5/8~: No pigmentation.

Full~: "Light dorsal pigmentation" (old notes). Some fine dend melan in dors and anal finfolds.

Unknown #99, observed sizes Apr 1, 1993

Summary: egg diameter: .62 (.59-.70)
oil globule number per egg: (7-14)
oil globule diam: (.04-.08)

		Egg diameter					Oil globule no.					Oil globule diam						
Area	Mon	Obs[1]	**Mean**	SD	Min	Max	Obs[2]	**Mean**	SD	Min	Max	Obs[3]	**Mean**	SD	Min	Max	Cruise	sta
GB s off	Oct	1	.-	.-	.70	.70	1	.-	.-	7	7	-	.-	.-	.04	.06	AL8408	245
SN	Mar	1e	.-	.-	.62	.62	0	.-	.-	-	-	-	.-	.-	.-	.-	AL8101	128
MA s off	May	7	.62	.015	.59	.63	0	.-	.-	-	-	0	.-	.-	.-	.-	DL8603	2
SA	Apr	3m	.66	.-	.65	.67	-	.-	.-	10	14	-	.-	.-	.06	.08	DL8503	139
SA	Apr	1	.-	.-	.69	.69	1	.-	.-	9	9	-	.-	.-	.05	.07	DL8503	142

[1]Refers to number of late-stage eggs unless noted otherwise.
[2]Refers to number of eggs in which oil globules were counted.
[3]Refers to number of oil globules measured, in 1 or more eggs.

Trinectes maculatus Taxon Code: 183 040 201 Apr 1, 1993

Shape and size: Spherical; (.70-.79)

Oil g: Multiple;
no. per egg; (15-20)
diameter; [no info]

Egg membrane: Single, smooth, clear and colorless
Yolk: Homogeneous
Pv space: Narrow (normal)
Myomeres:
Spawning: SNE: Aug
MAB: Jul, Aug

Pigmentation and form:

[No information on this, yet.]

Trinectes maculatus, observed sizes Apr 1, 1993

Summary: egg diameter: (.70-.79)
oil globule number per egg: (15-20)
oil globule diam: (no info)

		Egg diameter					Oil globule no.					Oil globule diam						
Area	Mon	Obs[1]	**Mean**	SD	Min	Max	Obs[2]	**Mean**	SD	Min	Max	Obs[3]	**Mean**	SD	Min	Max	Cruise	sta
SN	Aug	1e	.-	.-	.77	.77	-	.-	.-	20	20	-	.-	.-	.-	.-	BE7901	83
MA	Jul	7	.-	.-	.70	.79	-	.-	.-	15	20	-	.-	.-	.-	.-	EV8006	4

[1]Refers to number of late-stage eggs unless noted otherwise.
[2]Refers to number of eggs in which oil globules were counted.
[3]Refers to number of oil globules measured, in 1 or more eggs.

Unknown #95 Taxon Code: 100 000 095 Apr 1, 1993

[tentative identification: *T. maculatus*]

Shape and size: Spherical; .74 (.72-.88)

Oil g: Multiple;
no. per egg; (15-20)
diameter; [no info]

Egg membrane: Single, smooth, clear and colorless.
Yolk: Homogeneous
Pv space:
Myomeres:
Spawning: GB: Sep
SNE: Jul
MAB: Jun-Sep

Pigmentation and form:

MIDDLE

la-Mid: Punct melan on embryo, oil g and yolk. On embryo melan scatt dors and lat snout to tailtip; not lined up, not confined to lat aspects of h-brain, rather scatt all over it. Scatt over yolk but most dense post. Melan on oil g also.

LATE

7/8~: Sparsely scatt melan on dorsum of embryo and on yolk, very dend.

Unknown #95, observed sizes Apr 1, 1993

Summary: egg diameter: .74 (.72-.88)
oil globule number per egg: (15-20)
oil globule diam: [no info]

		Egg diameter					Oil globule no.					Oil globule diam						
Area	Mon	Obs[1]	**Mean**	SD	Min	Max	Obs[2]	**Mean**	SD	Min	Max	Obs[3]	**Mean**	SD	Min	Max	Cruise	sta
SN	Jul	1m	.-	.-	.77	.77	0	.-	.-	-	-	0	.-	.-	.-	.-	DL8406	6
MA s	Jun	1	.-	.-	.84	.84	-	.-	.-	15	20	0	.-	.-	.-	.-	AL7906	2
MA	Jun	10m	.74	.018	.72	.77	0	.-	.-	-	-	0	.-	.-	.-	.-	DL8604	124
MA	Jul	3m	.-	.-	.82	.88	0	.-	.-	-	-	0	.-	.-	.-	.-	AL7906	49

[1]Refers to number of late-stage eggs unless noted otherwise.
[2]Refers to number of eggs in which oil globules were counted.
[3]Refers to number of oil globules measured, in 1 or more eggs.

Unknown #193 Taxon Code: 100 000 193 Apr 1, 1993

Shape and size: Spherical; (.77)

Oil g: Multiple;
no. per egg; (approx 35)
diameter; [no info]

Egg membrane:
Yolk:
Pv space:
Myomeres:
Spawning: SNE: Jul, offshore

Pigmentation and form:

LATE

"No visible pigment on yolk" (old notes - destroyed in fire).

Unknown #193, observed sizes Apr 1, 1993

Summary: egg diameter: (.77)
oil globule number per egg: (approx 35)
oil globule diam: [no info]

		Egg diameter					Oil globule no.					Oil globule diam						
Area	Mon	Obs[1]	**Mean**	SD	Min	Max	Obs[2]	**Mean**	SD	Min	Max	Obs[3]	**Mean**	SD	Min	Max	Cruise	sta
SN off	Jul	1	.-	.-	.77	.77	0	.-	.-	-	-	0	.-	.-	.-	.-	EV8006	63

[1]Refers to number of late-stage eggs unless noted otherwise.
[2]Refers to number of eggs in which oil globules were counted.
[3]Refers to number of oil globules measured, in 1 or more eggs.

Unknown #186 Taxon Code: 100 000 186 Apr 1, 1993

Shape and size: Spherical; (.79)

Oil g: Multiple;
no. per egg; [no information]
diameter; [no information]

Egg membrane:
Yolk:
Pv space:
Myomeres:
Spawning: MAB: Sep

Pigmentation and form:

LATE

"Lots of pigment on embryo" (old notes - destroyed in fire).

Unknown #186, observed sizes Apr 1, 1993

Summary: egg diameter: (.79)
oil globule number per egg: [no information]
oil globule diam: [no information]

		Egg diameter					Oil globule no.					Oil globule diam						
Area	Mon	Obs[1]	**Mean**	SD	Min	Max	Obs[2]	**Mean**	SD	Min	Max	Obs[3]	**Mean**	SD	Min	Max	Cruise	sta
MA n off	Sep	1	.-	.-	.79	.79	0	.-	.-	-	-	0	.-	.-	.-	.-	AL8010	37

[1]Refers to number of late-stage eggs unless noted otherwise.
[2]Refers to number of eggs in which oil globules were counted.
[3]Refers to number of oil globules measured, in 1 or more eggs.

Unknown #227 Taxon Code: 100 000 227 Oct 3, 1994

Shape and size: Spherical; (0.93-0.96)

Oil g: Multiple;
no. per egg; (15-20)
diameter; (.04-.07)

Egg membrane: Single, smooth, clear and steel gray in color.
Yolk: Homogeneous
Pv space:
Myomeres:
Spawning: SN: Sep, offshore
MAB: Nov, south, offshore

Pigmentation and form:

LATE:
7/8~: Only one melan observed; at 9/10 BL, on ventral edge of embryo.

Unknown #227, observed sizes Oct 3, 1994

Summary: egg diameter: (0.93-0.96)
oil globule number per egg: (15-20)
oil globule diam: (.04-.07)

		Egg diameter					Oil globule no.					Oil globule diam						
Area	Mon	Obs[1]	**Mean**	SD	Min	Max	Obs[2]	**Mean**	SD	Min	Max	Obs[3]	**Mean**	SD	Min	Max	Cruise	sta
SN off	Sep	1	.-	.-	.93	.93	1	.-	.-	15	15	-	.-	.-	.04	.04	DL9110	184
MA s off	Nov	1e	.-	.-	.96	.96	1	.-	.-	18	20	-	.-	.-	.04	.07	DL8510	17

[1]Refers to number of late-stage eggs unless noted otherwise.
[2]Refers to number of eggs in which oil globules were counted.
[3]Refers to number of oil globules measured, in 1 or more eggs.

***Prionotus* spp.** Taxon Code: 170 570 500 Mar 31, 1993

Shape and size:	Spherical; .93-1.08 (.87-1.16)
Oil g:	Multiple;
	no. per egg; 11-15 (6-25)
	diameter; .08-.13 (.04-.18)
Egg membrane:	Single, smooth, clear and often red or copper tinted.
Yolk:	Homogeneous
Pv space:	Narrow (normal)
Myomeres:	
Spawning:	GB, SNE and MAB: Jun-Oct

Pigmentation and form:

MIDDLE

ea-Mid: A few faint dend melan scatt on dors, from mid-head (between eyes) to approx 1/3 or 1/2 BL; a couple on yolk adjacent to those melan just noted.

LATE

5/8~: Tail twisted and flexed. Dend melan (filmy in some) scatt on head; outline h-brain; then post scatt on dors and lat aspects; on post 1/4 body as relatively distinct and dark rows on dors and vent edges (outlining the tail); not in finfold. Melan on yolk, widely scatt, dend and hard to see; darkest (more contracted ?) on post-vent 1/2 yolk.

3/4~: Same as at 5/8~ except now scatt on h-brain (not just outline); and in dors and anal finfolds as loose patches at approx 3/4 BL. Extreme tailtip not as distinctly outlined (dors and vent) as at 5/8~, but the tail at between 3/5 and 4/5 BL is outlined; (tailtip seems to have outgrown the outlined area).

15/16~: Same filmy and dend melan on head and ant 1/2 body; dors and vent series outlining the 3rd 1/4 of body when viewed laterally; and post 1/4 is relatively clear of melan except for a couple of contracted melan at approx 9/10 BL (1 dors, 2 vent). Hind-gut outlined by melan; dors and anal finfold clusters of melan at approx 3/4 BL; dend, thread-like melan scatt on yolk and hard to see. None seem particularly associated with oil globules.

Prionotus spp., observed sizes Mar 31, 1993

Summary: egg diameter: .93-1.08 (.87-1.16)
oil globule number per egg: 11-15 (6-25)
oil globule diam: .08-.13 (.04-.18)

		Egg diameter					Oil globule no.					Oil globule diam						
Area	Mon	Obs[1]	**Mean**	SD	Min	Max	Obs[2]	**Mean**	SD	Min	Max	Obs[3]	**Mean**	SD	Min	Max	Cruise	sta
GB	Aug	10	1.05	.026	1.02	1.10	9	11.	.-	6	15	-	.-	.-	.04	.11	AL8507	413
MA n	Jun	10	1.08	.051	1.00	1.16	0	.-	.-	-	-	0	.-	.-	.-	.-	DL8604	26
MA	Jul	9	1.01	.034	.96	1.06	4	.-	.-	10	22	-	.-	.-	.04	.10	AL8507	181
MA s	Jul	12	.96	.029	.90	1.00	5	15.	.-	11	23	-	.-	.-	.04	.13	AL8407	102
MA n	Aug	34	1.01	.032	.94	1.09	-	.-	.-	15	25	-	.-	.-	.04	.08	AL8507	218
MA s mid	Aug	15	.97	.026	.91	1.01	13	13.9	3.48	8	20	17	.08	.014	.05	.11	DL8708	10
MA	Sep	10	.96	.039	.90	1.03	10	.-	.-	11	13	-	.10	.-	.07	.13	DL8507	38
MA	Sep	20	.93	.031	.87	.96	0	.-	.-	-	-	0	.-	.-	.-	.-	DL8507	44
MA	Sep	10	.96	.021	.94	1.00	0	.-	.-	-	-	0	.-	.-	.-	.-	DL8507	46
MA	Sep	10	.97	.033	.92	1.01	0	.-	.-	-	-	0	.-	.-	.-	.-	DL8507	49
MA	Sep	10	.97	.023	.94	1.00	1	.-	.-	11	11	-	.-	.-	.07	.11	AL8605	63
MA	Sep	10	.96	.027	.92	1.00	1	.-	.-	12	12	-	.-	.-	.06	.09	AL8607	84
MA	Oct	10	.93	.031	.89	.98	5	12.6	1.82	10	15	10	.13	.031	.09	.18	DL8608	124

[1]Refers to number of late-stage eggs unless noted otherwise.
[2]Refers to number of eggs in which oil globules were counted.
[3]Refers to number of oil globules measured, in 1 or more eggs.

Unknown #198 Taxon Code: 100 000 198 Apr 1, 1993

Shape and size:	Spherical; 1.10 (1.10)
Oil g:	Multiple;
	no. per egg; (10)
	diameter; (.06-.08)
Egg membrane:	Internal scattered uniform pustules
Yolk:	Homogeneous
Pv space:	wide; approx .10-.15
Myomeres:	ND
Spawning:	MAB: May, Nov

Pigmentation and form:

LATE

5/8~: Punct melan on embryo, yolk and ffold. On embryo sparsely scatt dorsally on head (1 over forebrain, then a few dors-lat over mid- and h-brain) then posteriad with tendency to be in 2 dors-lat rows to approx 3/4 BL with a few melan mid-dors; a few lat in pect area (1/3 BL); dors-lat rows seem to converge and end at approx 9/10 BL. Ventrally 4 or 5 on post 1/3 body. One melan in D ffold at approx 2/3 BL. Sparsely and widely scatt (approx 13-15 melan) on yolk.

Unknown #198, observed sizes Apr 1, 1993

Summary:	egg diameter:	1.10 (1.10)
	oil globule number per egg:	(10)
	oil globule diam:	(.06-.08)

		Egg diameter					Oil globule no.					Oil globule diam						
Area	Mon	Obs[1]	**Mean**	SD	Min	Max	Obs[2]	**Mean**	SD	Min	Max	Obs[3]	**Mean**	SD	Min	Max	Cruise	sta
MA s	May	2	1.10	.000	1.10	1.10	0	.-	.-	-	-	0	.-	.-	.-	.-	AL8403	10

[1]Refers to number of late-stage eggs unless noted otherwise.
[2]Refers to number of eggs in which oil globules were counted.
[3]Refers to number of oil globules measured, in 1 or more eggs.

Sarda sarda Taxon Code: 170 440 701 Mar 31, 1993

Shape and size: Spherical; 1.19-1.26 (1.18-1.37)

Oil g: Multiple; [or perhaps single, and almost always broken]
no. per egg; (2-10)
diameter; (max=.27)

Egg membrane: Single, smooth, clear and colorless.
Yolk: Homogeneous
Pv space: Narrow (normal)
Myomeres:
Spawning: SNE: Jun-Aug
MAB: May-Aug

Pigmentation and form:

LATE

[Tiny, punct and sparse melan.]

Sarda sarda, observed sizes Mar 31, 1993

Summary: egg diameter: 1.19-1.26 (1.18-1.37)
oil globule number per egg: (2-10)
oil globule diam: (max=.27)

		Egg diameter					Oil globule no.					Oil globule diam						
Area	Mon	Obs[1]	**Mean**	SD	Min	Max	Obs[2]	**Mean**	SD	Min	Max	Obs[3]	**Mean**	SD	Min	Max	Cruise	sta
SN	Jul	20	1.26	.030	1.21	1.30	-	.-	.-	2	10	0	.-	.-	.-	.-	AL7906	57
SN	Aug	4	1.19	.012	1.18	1.20	0	.-	.-	-	-	-	.-	.-	.-	.27	AL8507	218
MA	May	1	.-	.-	1.37	1.37	0	.-	.-	-	-	0	.-	.-	.-	.-	DL8003	1

[1]Refers to number of late-stage eggs unless noted otherwise.
[2]Refers to number of eggs in which oil globules were counted.
[3]Refers to number of oil globules measured, in 1 or more eggs.

Unknown #181 Taxon Code: 100 000 181 Apr 1, 1993

Shape and size: Spherical; (1.45-1.49)

Oil g: Multiple;
no. per egg; [no info]
diameter; [no info]

Egg membrane:
Yolk:
Pv space:
Myomeres:
Spawning: MAB: May, Sep

Pigmentation and form:

[No information on this, yet.]

Unknown #181, observed sizes Apr 1, 1993

Summary: egg diameter: (1.45-1.49)
oil globule number per egg: [no info]
oil globule diam: [no info]

		Egg diameter					Oil globule no.					Oil globule diam						
Area	Mon	Obs[1]	**Mean**	SD	Min	Max	Obs[2]	**Mean**	SD	Min	Max	Obs[3]	**Mean**	SD	Min	Max	Cruise	sta
MA s	May	1	.-	.-	1.45	1.49	0	.-	.-	-	-	0	.-	.-	.-	.-	DL8003	3

[1]Refers to number of late-stage eggs unless noted otherwise.
[2]Refers to number of eggs in which oil globules were counted.
[3]Refers to number of oil globules measured, in 1 or more eggs.

Unknown #213 Taxon Code: 100 000 213 Apr 1, 1993

[tentative identification: Soleidae]

Shape and size: Spherical; 1.47 (1.42-1.52)

Oil g: Multiple;
no. per egg; (10-15)
diameter; (.10-.15)

Egg membrane: Single, smooth, clear and colorless.
Yolk: Homogeneous
Pv space: Narrow (normal)
Myomeres: approx 30
Spawning: SAB: Apr offshore

Pigmentation and form:

LATE

Full~: Heavily pigmented embryo, finfold and yolk (not sure if oil g is pigm or not, yolk pigm obscures any if there). Dark melan all over head (but eyes weakly pigm), all over yolk membrane, including pect buds emphasized, void area on dors and lat of abdomen and void posterior 1/6 of body, otherwise heavy into finfold above abdomen and on body and into dors and anal finfolds in broad and striking band at about 2/3 BL.

Unknown #213, observed sizes Apr 1, 1993

Summary: egg diameter: 1.47 (1.42-1.52)
oil globule number per egg: (10-15)
oil globule diam: (.10-.15)

		Egg diameter					Oil globule no.					Oil globule diam						
Area	Mon	Obs[1]	**Mean**	SD	Min	Max	Obs[2]	**Mean**	SD	Min	Max	Obs[3]	**Mean**	SD	Min	Max	Cruise	sta
SA off	Apr	2	1.47	.071	1.42	1.52	-	.-	.-	10	15	-	.-	.-	.10	.15	DL8503	136

[1]Refers to number of late-stage eggs unless noted otherwise.
[2]Refers to number of eggs in which oil globules were counted.
[3]Refers to number of oil globules measured, in 1 or more eggs.

Unknown #86 Taxon Code: 100 000 086 Apr 1, 1993

Shape and size: Spherical; (2.70)

Oil g: Multiple;
no. per egg; [no info]
diameter; (approx .05)

Egg membrane:
Yolk:
Pv space:
Myomeres:
Spawning: MAB: Aug, offshore

Pigmentation and form:

LATE:

The only information we have now is that there is no pigment (at some indefinite late stage).

Unknown #86, observed sizes Apr 1, 1993

Summary: egg diameter: (2.70)
oil globule number per egg: [no information]
oil globule diam: (approx .05)

		Egg diameter					Oil globule no.					Oil globule diam						
Area	Mon	Obs[1]	**Mean**	SD	Min	Max	Obs[2]	**Mean**	SD	Min	Max	Obs[3]	**Mean**	SD	Min	Max	Cruise	sta
MA off	Aug	1	.-	.-	2.70	2.70	0	.-	.-	-	-	-	.-	.-	.05	.05	BE7901	17

[1]Refers to number of late-stage eggs unless noted otherwise.
[2]Refers to number of eggs in which oil globules were counted.
[3]Refers to number of oil globules measured, in 1 or more eggs.

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