

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

*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.

**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)

Area	Mon	Obs*	Egg diameter				Oil globule diameter					Cruise	Sta
			Mean	SD	Min	Max	Obs	Mean	SD	Min	Max		
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.

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 into 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.

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

Area	Mon	Egg diameter					Oil globule diameter					Cruise	Sta
		Obs*	Mean	SD	Min	Max	Obs	Mean	SD	Min	Max		
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.

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)

Area	Mon	Egg diameter					Oil globule diameter					Cruise	Sta
		Obs*	Mean	SD	Min	Max	Obs	Mean	SD	Min	Max		
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)

Area	Mon	Egg diameter					Oil globule diameter					Cruise	Sta
		Obs*	Mean	SD	Min	Max	Obs	Mean	SD	Min	Max		
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)

Area	Mon	Egg diameter					Oil globule diameter					Cruise	Sta
		Obs*	Mean	SD	Min	Max	Obs	Mean	SD	Min	Max		
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.

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.

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

Area	Mon	Egg diameter					Oil globule diameter					Cruise	Sta
		Obs*	Mean	SD	Min	Max	Obs	Mean	SD	Min	Max		
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)

Area	Mon	Egg diameter					Oil globule diameter				Cruise	Sta	
		Obs*	Mean	SD	Min	Max	Obs	Mean	SD	Min			Max
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.

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)

Area	Mon	Obs*	Egg diameter				Oil globule diameter				Cruise	Sta	
			Mean	SD	Min	Max	Obs	Mean	SD	Min			Max
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)

Area	Mon	Egg diameter					Oil globule diameter					Cruise	Sta
		Obs*	Mean	SD	Min	Max	Obs	Mean	SD	Min	Max		
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)

Area	Mon	Obs*	Egg diameter				Oil globule diameter					Cruise	Sta
			Mean	SD	Min	Max	Obs	Mean	SD	Min	Max		
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)

Area	Mon	Egg diameter					Oil globule diameter				Cruise	Sta	
		Obs*	Mean	SD	Min	Max	Obs	Mean	SD	Min			Max
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)

Area	Mon	Egg diameter					Oil globule diameter					Cruise	Sta
		Obs*	Mean	SD	Min	Max	Obs	Mean	SD	Min	Max		
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)

Area	Mon	Egg diameter					Oil globule diameter					Cruise	Sta
		Obs*	Mean	SD	Min	Max	Obs	Mean	SD	Min	Max		
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)

Area	Mon	Egg diameter					Oil globule diameter					Cruise	Sta
		Obs*	Mean	SD	Min	Max	Obs	Mean	SD	Min	Max		
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)

Area	Mon	Egg diameter					Oil globule diameter					Cruise	Sta
		Obs*	Mean	SD	Min	Max	Obs	Mean	SD	Min	Max		
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)

Area	Mon	Egg diameter					Oil globule diameter					Cruise	Sta
		Obs*	Mean	SD	Min	Max	Obs	Mean	SD	Min	Max		
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  
 ["Melan cluster on oil g"]

Sep 23, 1992

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)

Area	Mon	Egg diameter					Oil globule diameter				Cruise	Sta	
		Obs*	Mean	SD	Min	Max	Obs	Mean	SD	Min			Max
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)

Area	Mon	Egg diameter					Oil globule diameter					Cruise	Sta
		Obs*	Mean	SD	Min	Max	Obs	Mean	SD	Min	Max		
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)

Area	Mon	Egg diameter					Oil globule diameter					Cruise	Sta
		Obs*	Mean	SD	Min	Max	Obs	Mean	SD	Min	Max		
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 rupt 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)

Area	Mon	Obs*	Egg diameter				Oil globule diameter				Cruise	Sta	
			Mean	SD	Min	Max	Obs	Mean	SD	Min			Max
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)

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

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

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 tailtip; 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* than in *S. aquosus*.]

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

Area	Mon	Egg diameter					Oil globule diameter					Cruise	Sta
		Obs*	Mean	SD	Min	Max	Obs	Mean	SD	Min	Max		
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.

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)

Area	Mon	Egg diameter					Oil globule diameter					Cruise	Sta
		Obs*	Mean	SD	Min	Max	Obs	Mean	SD	Min	Max		
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.



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.

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

Area	Mon	Egg diameter					Oil globule diameter					Cruise	Sta
		Obs*	Mean	SD	Min	Max	Obs	Mean	SD	Min	Max		
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.

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. adpersus* 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)

Area	Mon	Egg diameter					Oil globule diameter					Cruise	Sta
		Obs*	Mean	SD	Min	Max	Obs	Mean	SD	Min	Max		
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.

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 <i>P. saltatrix</i> .]

**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.]

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

Area	Mon	Egg diameter					Oil globule diameter					Cruise	Sta
		Obs*	Mean	SD	Min	Max	Obs	Mean	SD	Min	Max		
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)

Area	Mon	Obs*	Egg diameter				Oil globule diameter				Cruise	Sta	
			Mean	SD	Min	Max	Obs	Mean	SD	Min			Max
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)

Area	Mon	Egg diameter					Oil globule diameter					Cruise	Sta
		Obs*	Mean	SD	Min	Max	Obs	Mean	SD	Min	Max		
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 tip (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)

Area	Mon	Obs*	Egg diameter				Oil globule diameter				Cruise	Sta	
			Mean	SD	Min	Max	Obs	Mean	SD	Min			Max
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)

Area	Mon	Egg diameter					Oil globule diameter					Cruise	Sta
		Obs*	Mean	SD	Min	Max	Obs	Mean	SD	Min	Max		
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 tip. A few (4) melan in anal ffold.

Unknown #147, observed sizes

Sep 22, 1992

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

Area	Mon	Egg diameter					Oil globule diameter					Cruise	Sta
		Obs*	Mean	SD	Min	Max	Obs	Mean	SD	Min	Max		
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.

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)

Area	Mon	Egg diameter					Oil globule diameter					Cruise	Sta
		Obs*	Mean	SD	Min	Max	Obs	Mean	SD	Min	Max		
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)

Area	Mon	Obs*	Egg diameter				Oil globule diameter				Cruise	Sta	
			Mean	SD	Min	Max	Obs	Mean	SD	Min			Max
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)

Area	Mon	Egg diameter					Oil globule diameter					Cruise	Sta
		Obs*	Mean	SD	Min	Max	Obs	Mean	SD	Min	Max		
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)

Area	Mon	Obs*	Egg diameter				Oil globule diameter				Cruise	Sta	
			Mean	SD	Min	Max	Obs	Mean	SD	Min			Max
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  
 [tentative identification: *Paralichthys* sp.]

Jul 19, 1989

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)

Area	Mon	Egg diameter					Oil globule diameter					Cruise	Sta
		Obs*	Mean	SD	Min	Max	Obs	Mean	SD	Min	Max		
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)

Area	Mon	Egg diameter					Oil globule diameter					Cruise	Sta
		Obs*	Mean	SD	Min	Max	Obs	Mean	SD	Min	Max		
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)

Area	Mon	Egg diameter					Oil globule diameter					Cruise	Sta
		Obs*	Mean	SD	Min	Max	Obs	Mean	SD	Min	Max		
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)

Area	Mon	Obs*	Egg diameter				Oil globule diameter				Cruise	Sta	
			Mean	SD	Min	Max	Obs	Mean	SD	Min			Max
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.

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)

Area	Mon	Egg diameter					Oil globule diameter					Cruise	Sta
		Obs*	Mean	SD	Min	Max	Obs	Mean	SD	Min	Max		
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  
[formerly Unk #189]

Sep 17, 1992

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)

Area	Mon	Obs*	Egg diameter				Oil globule diameter				Cruise	Sta	
			Mean	SD	Min	Max	Obs	Mean	SD	Min			Max
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)

Area	Mon	Obs <sup>1</sup>	Egg diameter				Oil globule no.				Oil globule diam				Cruise	Sta		
			Mean	SD	Min	Max	Obs <sup>2</sup>	Mean	SD	Min	Max	Obs <sup>3</sup>	Mean	SD			Min	Max
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

<sup>1</sup>Refers to number of late-stage eggs unless noted otherwise.

<sup>2</sup>Refers to number of eggs in which oil globules were counted.

<sup>3</sup>Refers to number of oil globules measured, in 1 or more eggs.

Unknown #225 Taxon Code: 100 000 225

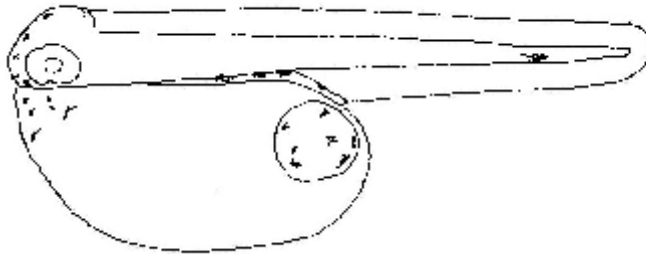
Mar 3, 1992

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 75-80  
 (20 + 55-60)

Unknown #225, observed sizes

Jul 19, 1989

Summary: (1.20), og (.29)

Area	Mon	Obs*	Egg diameter				Oil globule diameter				Cruise	Sta	
			Mean	SD	Min	Max	Obs	Mean	SD	Min			Max
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)

Area	Mon	Egg diameter					Oil globule diameter					Cruise	Sta
		Obs*	Mean	SD	Min	Max	Obs	Mean	SD	Min	Max		
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)

Area	Mon	Egg diameter					Oil globule diameter					Cruise	Sta
		Obs*	Mean	SD	Min	Max	Obs	Mean	SD	Min	Max		
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)

Area	Mon	Obs*	Egg diameter				Oil globule diameter				Cruise	Sta	
			Mean	SD	Min	Max	Obs	Mean	SD	Min			Max
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)

Area	Mon	Egg diameter					Oil globule diameter				Cruise	Sta	
		Obs*	Mean	SD	Min	Max	Obs	Mean	SD	Min			Max
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)

Area	Mon	Outer diam					Inner diam					Oil globule diam					Cruise	Sta
		Obs <sup>1</sup>	Mean	SD	Min	Max	Obs	Mean	SD	Min	Max	Obs <sup>3</sup>	Mean	SD	Min	Max		
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)

Area	Mon	Egg diameter					Oil globule diameter					Cruise	Sta
		Obs*	Mean	SD	Min	Max	Obs	Mean	SD	Min	Max		
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.

[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)

Area	Mon	Egg diameter					Oil globule diameter					Cruise	Sta
		Obs*	Mean	SD	Min	Max	Obs	Mean	SD	Min	Max		
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)

Area	Mon	Obs*	Egg diameter				Oil globule diameter				Cruise	Sta	
			Mean	SD	Min	Max	Obs	Mean	SD	Min			Max
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)

Area	Mon	Egg diameter				Oil globule diameter				Cruise	Sta		
		Obs*	Mean	SD	Min	Max	Obs	Mean	SD			Min	Max
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)

Area	Mon	Egg diameter					Oil globule diameter					Cruise	Sta
		Obs*	Mean	SD	Min	Max	Obs	Mean	SD	Min	Max		
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)

Area	Mon	Obs*	Egg diameter				Oil globule diameter				Cruise	Sta	
			Mean	SD	Min	Max	Obs	Mean	SD	Min			Max
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]

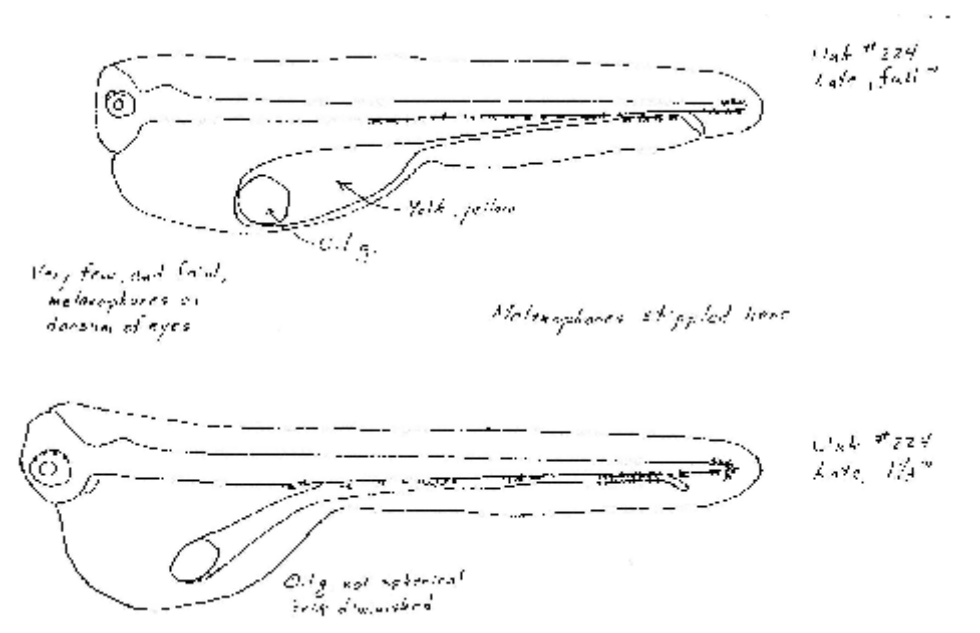
Shape and size: Spherical; 2.22 (1.96-2.29)  
 Oil g: Single; .31 (.30-.32)  
 Egg membrane: Single, smooth, clear and colorless  
 Yolk: Appears finely segmented as ea-Late, becoming homogeneous  
 Pv space: Wide  
 Myomeres: Numerous (100+ ?)  
 Spawning: MAB: Jul-Sep (south)

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)

Area	Mon	Egg diameter					Oil globule diameter					Cruise	Sta
		Obs*	Mean	SD	Min	Max	Obs	Mean	SD	Min	Max		
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)

Area	Mon	Egg diameter					Oil globule diameter					Cruise	Sta
		Obs*	Mean	SD	Min	Max	Obs	Mean	SD	Min	Max		
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

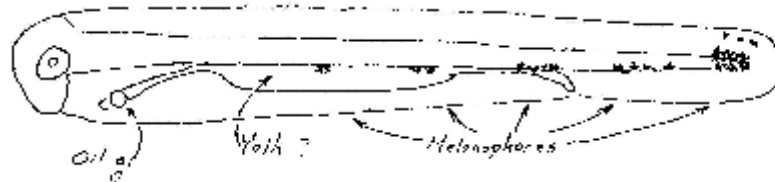
[Anguilliformes]

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.



*Unknown #206  
 Late stage,  
 1 1/3~*

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)

Area	Mon	Obs*	Egg diameter				Oil globule diameter				Cruise	Sta	
			Mean	SD	Min	Max	Obs	Mean	SD	Min			Max
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)

Area	Mon	Obs*	Egg diameter				Oil globule diameter				Cruise	Sta	
			Mean	SD	Min	Max	Obs	Mean	SD	Min			Max
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.