

Larval fish collected and identified from three locations on Oahu, Hawaii

Tenera has conducted studies of the ichthyoplankton at three locations on the island of Oahu, Hawaii. The following is a list of the larval fish collected and identified by Tenera from the various locations. All collections were conducted using 335 micron mesh plankton nets. Written field and laboratory procedures with QA/QC reviews were used throughout all of these studies. All identifications were completed using a variety of references including but not limited to Moser 1996, Miller, Watson and Leis 1979, and Mundy 2005. The identification of some of the Carangidae, Pomacentridae and Gobiidae was determined and verified by DNA analysis. Tenera maintain one of the largest voucher collections of California and Hawaiian larval fishes outside of federal, state, and academic institutions. The lengths of many of the fish were determined using a microscope based customized image analysis software program. Tenera has also worked with larval otoliths to assist in determining an age/length relationship for certain of the collected larval fish families.

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Order	Family	Taxon	Common Name
Anguilliformes		Anguilliformes larvae	larval eel
	Congridae	Congridae	conger eels
Clupeiformes			
	Clupeidae	Clupeidae	herrings
	Clupeidae	<i>Etrumeus teres</i>	round herring
	Clupeidae	<i>Spratelloides delicatulus</i>	delicate round herring
	Engraulidae	<i>Encrasicholina</i> spp.	anchovies
Stomiiformes			
	Gonostomatidae	Cyclothone spp.	bristlemouths
	Gonostomatidae	Gonostomatidae	bristlemouths
	Phosichthyidae	Phosichthyidae	lightfishes
	Phosichthyidae	<i>Vinciguerria nimbaria</i>	oceanic lightfish
	Phosichthyidae	<i>Vinciguerria poweriae</i>	highseas lightfish
	Phosichthyidae	<i>Vinciguerria</i> spp.	lightfishes
	Stomiidae	Stomiidae	scaly dragonfishes
Aulopiformes			
	Evermannellidae	Evermannellidae	sabertooth fishes
	Synodontidae	Synodontidae	lizardfishes
	Paralepididae	Paralepididae	barracudinas
Myctophiformes			
	Mytophidae	<i>Bolinichthys longipes</i>	popeye lampfish
	Mytophidae	<i>Bolinichthys</i> spp.	lampfishes
	Mytophidae	<i>Ceratoscopelus</i> spp.	lampfishes
	Mytophidae	<i>Ceratoscopelus townsendi</i>	dogtooth lampfish
	Mytophidae	<i>Diaphus</i> spp.	headlightfishes
	Mytophidae	<i>Diogenichthys</i> spp.	lanternfishes
	Mytophidae	<i>Hygophum proximum</i>	lanternfish
	Mytophidae	<i>Hygophum reinhardtii</i>	slender lanternfish
	Mytophidae	<i>Hygophum</i> spp.	lanternfishes
	Mytophidae	<i>Lampadena</i> spp.	lanternfishes
	Mytophidae	<i>Lampadena urophaos</i>	lanternfish
	Mytophidae	<i>Lampanyctus nobilis</i>	lanternfish
	Mytophidae	<i>Lampanyctus</i> spp.	lanternfishes
	Mytophidae	<i>Lampanyctus tenuiformes</i>	lanternfish
	Mytophidae	<i>Lobianchia gemellarii</i>	lampfish
	Mytophidae	Myctophidae	lanternfishes
	Mytophidae	<i>Nannobranchium</i> spp.	lanternfishes
	Mytophidae	<i>Notoscopelus</i> spp.	lampfishes
	Mytophidae	<i>Symbolophorus</i> spp.	lanternfishes
	Mytophidae	<i>Taaningichthys</i> spp.	lanternfishes
	Mytophidae	<i>Triphoturus mexicanus</i>	Mexican lampfish
	Mytophidae	<i>Triphoturus nigrescens</i>	highseas lampfish
	Mytophidae	<i>Triphoturus</i> spp.	lampfishes

(table continued)

Larval fish collected and identified from three locations on Oahu, Hawaii (continued)

Order	Family	Taxon	Common Name
Gonorynchiformes			
	Chanidae	<i>Chanos chanos</i>	milkfish
Lophiiformes			
		Lophiiformes	anglerfishes
	Oneirodidae	Oneirodidae	deepsea anglerfishes
	Ceratiidae	Ceratiidae	deepsea anglerfishes
Ophidiiformes			
	Ophidiidae	Ophidiidae	cusk-eels
Beloniformes			
	Exocoetidae	Exocoetidae	flyingfishes
	Hemiramphidae	Hemiramphidae	halfbeaks
Atheriniformes			
	Atherinopsidae	<i>Atherinomorus insularum</i>	Hawaiian silverside
	Notocheiridae	<i>Iso hawaiiensis</i>	Hawaiian surf sardine
Gasterosteiformes			
	Fistulariidae	<i>Fistularia</i> spp.	cornetfishes
	Fistulariidae	Fistulariidae	cornetfishes
	Syngnathidae	<i>Doryrhamphus</i> spp.	fantail pipefishes
	Syngnathidae	<i>Hippocampus</i> spp.	seahorses
	Syngnathidae	Syngnathidae	pipefishes
Scorpaeniformes			
	Scorpaenidae	Scorpaenidae	scorpion fishes
	Triglidae	Triglidae	searobins
Perciformes			
	Apogonidae	<i>Apogon</i> spp.	cardinalfishes
	Apogonidae	Apogonidae	cardinalfishes
	Apogonidae	<i>Foa brachygramma</i>	bay cardinalfish
	Apogonidae	<i>Pseudamiops diaphanes</i>	transparent cardinalfish
	Blenniidae	Blenniidae	blennies
	Blenniidae	<i>Plagiotremus</i> spp.	fangblenny
	Blenniidae	Salariinae	blennies
	Callionymidae	Callionymidae	dragonets
	Carangidae	<i>Atule mate</i>	yellowtail scad
	Carangidae	Carangidae	jacks
	Carangidae	<i>Caranx/Atule</i> spp.	jacks
	Carangidae	<i>Gnathanodon speciosus</i>	golden trevally
	Coryphaenidae	<i>Coryphaena hippurus</i>	common dolphinfish
	Coryphaenidae	<i>Coryphaena</i> spp.	dolphinfish
	Eleotridae	Eleotridae	sleepers
		Gobioidei	gobies
	Gobiidae	<i>Bathygobius</i> spp.	gobies

Some of the larval Carangidae and Gobiidae identifications based on DNA analysis.

(table continued)

Larval fish collected and identified from three locations on Oahu, Hawaii (continued)

Order	Family	Taxon	Common Name
Perciformes (continued)			
	Gobiidae	<i>Eviota</i> spp.	gobies
	Gobiidae	Gobiidae	gobies
	Gobiidae	<i>Priolepis</i> spp.	gobies
	Gempylidae	Gempylidae	snake mackerels
	Gempylidae	<i>Gempylus serpens</i>	snake mackerel
	Howellidae	<i>Howella</i> spp.	oceanic cardinalfishes
	Howellidae	Howellidae	pelagic basslets
	Kraemeriidae	Kraemeriidae	sand gobies
	Labridae	Labridae	wrasses
	Microdesmidae	Microdesmidae	dartfishes
	Mullidae	Mullidae	goatfishes
	Nomeidae	<i>Cubiceps pauciradiatus</i>	bigeye cigarfish
	Nomeidae	<i>Cubiceps</i> spp.	cigarfishes
	Pomacentridae	<i>Abudefduf</i> spp.	sergeants
	Pomacentridae	<i>Abudefduf abdominalis</i>	Hawaiian sergeant
	Pomacentridae	<i>Abudefduf sordidus</i>	blackspot sergeant
	Pomacentridae	<i>Abudefduf vaigiensis</i>	Indo-Pacific sergeant
	Pomacentridae	<i>Dascyllus albisella</i>	Hawaiian dascyllus
	Pomacentridae	Pomacentridae	damsel fishes
	Pomacentridae	<i>Plectroglyphidodon imparipennis</i>	brighteye damselfish
	Scaridae	Scaridae	parrotfishes
	Schindleriidae	<i>Schindleria pietschmanni</i>	infantfish
	Schindleriidae	<i>Schindleria praematurus</i>	Schindler's fish
	Schindleriidae	<i>Schindleria</i> spp.	infantfishes
	Serranidae	Serranidae	sea basses
	Sphyraenidae	<i>Sphyraena</i> spp.	barracudas
	Sphyraenidae	Sphyraenidae	barracudas
	Scombrabrachidae	<i>Scombrabrach heterolepis</i>	black mackerel
	Scombridae	<i>Auxis</i> spp.	frigate mackerels
	Scombridae	<i>Katsuwonus pelamis</i>	skipjack tuna
	Scombridae	Scombridae	mackerels and tunas
	Scombridae	<i>Thunnus albacares</i>	yellowfin tuna
	Scombridae	<i>Thunnus</i> spp.	tunas
	Tripterygiidae	<i>Enneapterygius atriceps</i>	Hawaiian triplefin
Pleuronectiformes			
	Bothidae	Bothidae	lefteye flounders
	Pleuronectidae	Pleuronectidae	righteye flounders
Tetraodontiformes			
	Balistidae	<i>Canthidermis maculata</i>	rough triggerfish
	Diodontidae	Diodontidae	porcupinefishes
	Molidae	<i>Ranzania laevis</i>	slender mola
	Ostraciidae	Ostraciidae	trunkfishes
	Tetraodontidae	Tetraodontidae	puffers

Some of the larval Gobiidae and Pomacentridae identifications based on DNA analysis.