

PACIFIC ISLANDS FISHERIES SCIENCE CENTER



Catalog of Coral Reef Fish Life History Specimens for the Hawaiian Islands

Mary K. Donovan, Ivor D. Williams,
Alan M. Friedlander, Kenneth Longnecker,
James P. Beets, Brian W. Bowen,
and Erik C. Franklin

August 2011



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Pacific Islands Fisheries Science Center
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Catalog of Coral Reef Fish
Life History Specimens for the
Hawaiian Islands

Compiled By

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INTRODUCTION

A decrease in nearshore fishery resources in Hawaii has occurred in recent decades; thus, there is a pressing need to better manage Hawaiian coral reef fish stocks. However, available biological and fishery data are limited for most coral reef species. Life history information is essential for identifying distinct stocks and describing their dynamics, and thus provides the basis for stock assessments and scientifically sound fishery management (Beverton and Holt, 1957).

To date, no coral reef stocks in the Hawaiian Archipelago have been determined to be overfished, but the information necessary to make accurate judgments is generally lacking. The availability of reliable life history information on growth rate and size at reproduction will allow scientists and managers to establish reference points, such as spawning potential ratio and spawning stock biomass. Therefore, reliable life-history information is a prerequisite for effective fishery management, and particularly for setting appropriate defensible levels of extraction.

Beyond the valuable nature of these data for conventional fisheries management, life history information is becoming increasingly important for marine spatial planning. Recent studies have highlighted the use of life history information in evaluating the effectiveness of marine protected areas (Kaplan, 2009). An understanding of a species' population responses to protection can be obtained from knowledge of life history characteristics such as growth and reproductive capacity. Further, where life history information is available, population dynamics can be considered when determining optimum sizes and locations of protected areas along with other factors such as movement and migration.

The collection and dissemination of life history information for coral reef fishes in Hawaii has been identified as a priority by stakeholders. In 2007 the University of Hawaii at Hilo hosted a workshop on "Hawaii Marine Resources: Life History" with the goals of identifying life history information needed for management and developing strategies to work collectively to obtain this information. The need to develop a catalog of existing specimens suitable for life history work was an outcome of this workshop.

The following is a summary of existing coral reef fish specimens suitable for life history work in Hawaii. Information is organized by specimen location, with the primary contact person listed at the top of the table. Only species groups with greater than 5 specimens were included. Interested parties should contact the person/place listed at the top of each table for availability of samples.

REFERENCES

Beverton, R., and S. Holt.

1957. On the dynamics of exploited fish populations. Vol. Chapman & Hall, London.

Kaplan, D. M.

2009. Fish life histories and marine protected areas: an odd couple? *Mar. Ecol. Prog. Ser.* 377:213-225.

Bishop Museum					
Contact: Dr. Kenneth Longnecker klongnecker@bishopmuseum.org				(808) 847-8273 (phone) (808) 847-8252 (fax)	
Location where samples collected	Family	Species	# of specimens	Status of specimens	Other information available
Kaneohe Bay, Oahu	Acanthuridae	<i>Acanthurus triostegus*</i>	14	All specimens dissected, otoliths ready for preparation	Weight (g), latitude/longitude of collection, depth of collection, time of collection
		<i>Ctenochaetus strigosus*</i>	10		
		<i>Zebrasoma flavescens</i>	5		
		<i>Acanthurus nigrofuscus</i>	9		
	Anthiinae	<i>Plectranthias nanus</i>	7	*not available	
	Apogonidae	<i>Apogon erythrinus</i>	8		
	Aulostomidae	<i>Aulostomus chinensis</i>	13		
	Balistidae	<i>Sufflamen bursa</i>	10		
	Blenniidae	<i>Cirripectes vanderbilti</i>	23		
		<i>Entomacrodus strasburgi</i>	42		
	Chaetodontidae	<i>Chaetodon quadrimaculatus</i>	10		
		<i>Chaetodon multicinctus</i>	9		
		<i>Chaetodon fremblii</i>	6		
		<i>Chaetodon ornatissimus</i>	5		
		<i>Chaetodon miliaris</i>	7		
	Cirrhitidae	<i>Paracirrhites forsteri</i>	30		
		<i>Cirrhitis pinnulatus</i>	24		
		<i>Amblycirrhitis bimacula</i>	22		
		<i>Paracirrhites arcatus</i>	19		
		<i>Cirrhitops fasciatus</i>	6		
		<i>Eviota epiphanes</i>	81		
	Gobiidae	<i>Trimma unisquamis</i>	32		
		<i>Eviota rubra</i>	9		
		<i>Priolepis eugenius</i>	7		
		<i>Priolepis farcimen</i>	6		
	Holocentridae	<i>Myripristis kuntee</i>	9		
<i>Sargocentron diadema</i>		7			
<i>Sargocentron punctatissimum</i>		7			
Kuhliidae	<i>Kuhlia sandvichiensis</i>	7			
	<i>Bodianus bilunulatus</i>	33			

Bishop Museum cont.

	Labridae	<i>Coris venusta</i>	13		
		<i>Thalassoma ballieui</i>	24		
		<i>Anampses cuvier</i>	6		
		<i>Thalassoma duperrey</i>	20		
		<i>Lutjanus kasmira</i>	16		
	Lutjanidae	<i>Cantherhines sandwichiensis</i>	6		
	Monacanthidae	<i>Parupeneus cyclostomus</i>	14		
	Mullidae	<i>Parupeneus multifasciatus*</i>	34		
		<i>Parupeneus porphyreus</i>	19		
		<i>Parupeneus pleurostigma</i>	9		
		<i>Gymnothorax flavimarginatus</i>	7		
	Muraenidae	<i>Gymnothorax meleagris</i>	7		
		<i>Gymnothorax eurostus</i>	6		
		<i>Parapercis schauinslandii</i>	8		
	Pinguipedidae	<i>Abudefduf abdominalis</i>	10		
	Pomacentridae	<i>Chromis vanderbilti</i>	22		
		<i>Dascyllus albisella</i>	11		
		<i>Chromis ovalis</i>	5		
		<i>Plectroglyphidodon johnstonianus</i>	5		
		<i>Calotomus carolinus</i>	5		
	Scaridae	<i>Scorpaena galactacma</i>	12		
	Scorpaenidae	<i>Scorpaenodes kelloggi</i>	31		
		<i>Sebastapistes coniora</i>	13		
		<i>Scorpaenopsis fowleri</i>	8		
		<i>Scorpaena coniora</i>	5		
		<i>Cephalopholis argus</i>	81		
	Serranidae	<i>Pseudogramma polyacantha</i>	11		
	Tetradontidae	<i>Canthigaster jactator</i>	14		
	Tripterygiidae	<i>Enneapterygius atriceps</i>	65		

Hawaii Cooperative Fishery Research Unit
Northwestern Hawaiian Islands 1980s

Contact: Dr. Alan Friedlander
friedlander@hawaii.edu

Date of collection	Location where were samples collected	Species	# of samples	Status of specimens	Other information available
1980	French Frigate Shoals	Acanthurus nigrofuscus	1	Samples frozen, bagged by collection date and location	Method of collection variable, some specimens have been previously stored in formalin
		Acanthurus nubilus	1		
		Naso lituratus	1		
		Parupeneus multifasciatus	2		
		Stethojulis balteata	2		
1982	Midway	Thalassoma ballieui	33		
	French Frigate Shoals	Bodianus bilunulatus	1		
		Holocentridae sp	1		
	Midway	Labridae sp	1		
		Dendrochirus barberi	6		
Scorpaenopsis cacopsis		3			
1983	French Frigate Shoals	Scorpaenopsis diabolus	1		
		Sebastapistes ballieui	3		
		Synodus ulae	9		
		Anampses cuvier	2		
		Apogon kallopterus	74		
		Apogon sp	39		
		Chaetodon miliaris	5		
		Chlorurus perspicillatus	4		
		Chromis ovalis	27		
		Coris venusta	4		
		Ctenochaetus strigosus	7		
		Forcipiger longirostris	3		
		Gomphosus varius	2		
		Holocentridae sp	6		
		Macropharyngodon geoffroy	2		
Mulloidichthys vanicolensis	25				
Myripristinae sp	7				

HCFRU-NWHI continued

		Myripristis berndti	2		
		Neoniphon sammara	11		
		Oxycheilinus unifasciatus	1		
		Parupeneus cyclostomus	1		
		Parupeneus multifasciatus	3		
		Sargocentron sp	18		
		Scarus sp	15		
		Stegastes fasciolatus	12		
		Stethojulis balteata	3		
		Synodus ulae	1		
		Thalassoma duperrey	6		
		Un-id fish sp	4		
		Zanclus cornutus	1		
	Midway	Abudefduf abdominalis	1		
		Aulostomus chinensis	8		
		Blenniidae sp	1		
		Bodianus bilunulatus	1		
		Bothidae sp	2		
		Bothus mancus	2		
		Chaetodon miliaris	2		
		Conger cinereus	1		
		Coris venusta	2		
		Ctenochaetus strigosus	1		
		Dascyllus albisella	1		
		Dendrochirus barberi	27		
		Gymnothorax meleagris	4		
		Gymnothorax sp	1		
		Gymnothorax steindachneri	12		
		Neoniphon sammara	1		
		Paracirrhites arcatus	1		
		Paracirrhites forsteri	2		
		Parupeneus cyclostomus	1		

HCFRU-NWHI continued

1984	Midway	Pterois sphex	3		
		Scolopsis lineata	1		
		Scomberomorus commerson	2		
		Scorpaenopsis cacopsis	1		
		Scorpaenopsis diabolus	8		
		Sebastapistes ballieui	8		
		Sebastapistes coniorta	2		
		Stegastes sp	13		
		Synodus ulae	3		
		Thalassoma ballieui	3		
		Un-id fish sp	5		
		Aulostomus chinensis	8		
		Bodianus bilunulatus	1		
		Bothus mancus	3		
		Congridae sp	2		
		Dendrochirus barberi	30		
		Fistularia commersonii	1		
		Gymnothorax eurostus	9		
		Gymnothorax steindachneri	10		
		Paracirrhites forsteri	7		
		Pterois sphex	1		
		Saurida gracilis	4		
		Scorpaenopsis cacopsis	7		
Scorpaenopsis diabolus	7				
Sebastapistes ballieui	24				
Sebastapistes coniorta	3				
Synodus ulae	142				
Taenianotus triacanthus	1				
1985	French Frigate Shoals	Thalassoma ballieui	4		
		Caranx ignobilis	1		
		Caranx melampygus	1		

HCFRU-NWHI continued

unkn	Midway	Chaetodon auriga	2		
		Chaetodon miliaris	6		
		Chlorurus perspicillatus	2		
		Cymolutes lecluse	4		
		Dascyllus albisella	4		
		Dendrochirus barberi	2		
		Gymnothorax sp	36		
		Pervagor aspricaudus	6		
		Scorpaenopsis diabolus	2		
		Sebastapistes coniora	1		
	Stegastes fasciolatus	4			
	Synodus ulae	4			
	Thalassoma ballieui	2			
	Midway	Aulostomus chinensis	1		
		Cirrhitus pinnulatus	1		
		Congridae sp	1		
		Dendrochirus barberi	5		
		Gymnothorax eurostus	1		
		Scorpaenopsis cacopsis	2		
		Scorpaenopsis sp	3		
Sebastapistes ballieui		5			
Synodus ulae		30			
Thalassoma ballieui		1			

Hawaii Institute of Marine Biology
Northwestern Hawaiian Islands

Contact: Erik Franklin
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Family	Species	Locations of Collections	Status of specimens	Other information available
Acanthuridae	<i>Ctenochaetus strigosus</i>	Kure Atoll	Frozen, whole	Measurements include the standard length, total length, fork length, sex, and age for each individual. The collection and preservation of gonads and fin clips for genetic study as well as the collection date, processing date and collection location by island and geographic coordinates are also noted.
	<i>Zebrasoma flavescens</i>	Midway Atoll		
	<i>Acanthurus nigroris</i>	Pearl and Hermes Atoll		
	<i>Acanthurus olivaceus</i>	Lisianski Island		
Albulidae	<i>Albula glossodonta</i>	Laysan Island		
Aulostomidae	<i>Aulostomus chinensis</i>	Maro Reef		
Carangidae	<i>Carangoides orthogrammus</i>	Gardner Pinnacles		
	<i>Caranx melampygus</i>	French Frigate Shoals		
Chaetodontidae	<i>Heniochus diphreutes</i>	Necker Island		
	<i>Chaetodon fremblii</i>	Nihoa Island		
	<i>Chaetodon lunulatus</i>	Kauai		
	<i>Chaetodon miliaris</i>	Oahu		
Holocentridae	<i>Chaetodon multincinctus</i>	Maui		
	<i>Myripristis berndti</i>	Hawaii		
	<i>Sargocentron xantherythrum</i>			
Kuhliidae	<i>Kuhlia xenura</i>			
Labridae	<i>Coris gaimard</i>			
	<i>Coris venusta</i>			
	<i>Thalassoma ballieui</i>			
Lutjanidae	<i>Lutjanus kasmira</i>			
Monacanthidae	<i>Pervagor spilosoma</i>			
Mullidae	<i>Parupeneus bifasciatus</i>			
	<i>Parupeneus multifasciatus</i>			
	<i>Parupeneus pleurostigma</i>			
	<i>Parupeneus porphyreus</i>			
	<i>Mulloidichthys vanicolensis</i>			
Muraenidae	<i>Gymnothorax steindachneri</i>			
Priacanthidae	<i>Heteropriacanthus cruentatus</i>			
	<i>Priacanthus meeki</i>			
Scaridae	<i>Calotomus carolinus</i>			
Serranidae	<i>Cephalopholis argus</i>			
	<i>Pseudanthias thompsoni</i>			
Tetraodontidae	<i>Canthigaster jactator</i>			

University of Hawaii at Hilo

Contact: Drs. Jim Beets and Jason Turner
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Location where were samples collected	Family	Species	# of Specimens	Status of specimens	Other information available
Big Island	Acanthuridae	<i>Acanthurus nigrofuscus</i>	9	Frozen, majority only head and tissue available	
		<i>Acanthurus olivaceus</i>	17		
		<i>Zebrasoma flavescens</i>	21		
		<i>Ctenochaetus strigosus</i>	47		
	Holocentridae	<i>Myripristis kuntee</i>	14		
		<i>Myripristis berndti</i>	59		
	Lutjanidae	<i>Lutjanus kasmira</i>	5		
Serranidae	<i>Cephalopholis argus</i>	13			
French Frigate Shoals	Acanthuridae	<i>Ctenochaetus strigosus</i>	10		
		<i>Acanthurus nigroris</i>	11		
		<i>Acanthurus triostegus</i>	19		
		<i>Acanthurus olivaceus</i>	47		
	Chaetodontidae	<i>Chaetodon miliaris</i>	9		
		<i>Chaetodon fremblii</i>	15		
	Labridae	<i>Bodianus bilunulatus</i>	7		
		<i>Halichoeres ornatissimus</i>	11		
		<i>Thalassoma ballieui</i>	20		
	Mullidae	<i>Parupeneus multifasciatus</i>	5		
	Pomacentridae	<i>Stegastes fasciolatus</i>	6		
	Priacanthidae	<i>Priacanthus meeki</i>	14		
	Scaridae	<i>Chlorurus perspicillatus</i>	12		
	Kauai	Acanthuridae	<i>Ctenochaetus strigosus</i>	8	
			<i>Acanthurus olivaceus</i>	9	
<i>Acanthurus triostegus</i>			15		
Holocentridae		<i>Myripristis berndti</i>	6		
Kyphosidae		<i>Kyphosus cinerascens</i>	6		
Labridae	<i>Bodianus bilunulatus</i>	5			
Kure	Acanthuridae	<i>Acanthurus triostegus</i>	6		
		<i>Acanthurus nigroris</i>	17		
		<i>Ctenochaetus strigosus</i>	27		

UH Hilo cont.

Lanai	Labridae	<i>Bodianus bilunulatus</i>	5		
	Acanthuridae	<i>Zebrasoma flavescens</i>	31		
		<i>Ctenochaetus strigosus</i>	44		
		Holocentridae	<i>Myripristis berndti</i>	26	
	Serranidae	<i>Cephalopholis argus</i>	40		
Maro Reef	Acanthuridae	<i>Zebrasoma flavescens</i>	16		
		<i>Ctenochaetus strigosus</i>	20		
		<i>Acanthurus triostegus</i>	38		
		<i>Acanthurus nigroris</i>	71		
	Chaetodontidae	<i>Chaetodon miliaris</i>	13		
		<i>Chaetodon fremblii</i>	23		
		<i>Chaetodon lunulatus</i>	35		
	Labridae	<i>Coris venusta</i>	9		
		<i>Thalassoma ballieui</i>	40		
	Mullidae	<i>Parupeneus multifasciatus</i>	24		
Priacanthidae	<i>Priacanthus meeki</i>	28			
Maui	Acanthuridae	<i>Zebrasoma flavescens</i>	32		
		<i>Ctenochaetus strigosus</i>	79		
	Labridae	<i>Oxycheilinus unifasciatus</i>	11		
Midway	Serranidae	<i>Cephalopholis argus</i>	17		
	Acanthuridae	<i>Acanthurus olivaceus</i>	16		
		<i>Ctenochaetus strigosus</i>	16		
		<i>Acanthurus triostegus</i>	21		
		<i>Acanthurus nigroris</i>	30		
	Blenniidae	<i>Cirripectes vanderbilti</i>	6		
	Chaetodontidae	<i>Chaetodon lunulatus</i>	11		
		<i>Chaetodon miliaris</i>	12		
		<i>Chaetodon fremblii</i>	29		
	Labridae	<i>Coris venusta</i>	8		
		<i>Thalassoma purpureum</i>	9		
		<i>Bodianus bilunulatus</i>	10		
		<i>Thalassoma ballieui</i>	13		
Lutjanidae	<i>Lutjanus kasmira</i>	24			
Mullidae	<i>Parupeneus porphyreus</i>	13			
	<i>Parupeneus multifasciatus</i>	20			

UH Hilo cont.

Molokai	Priacanthidae	<i>Priacanthus meeki</i>	37		
	Acanthuridae	<i>Ctenochaetus strigosus</i>	35		
	Holocentridae	<i>Myripristis berndti</i>	45		
	Lutjanidae	<i>Lutjanus kasmira</i>	11		
	Serranidae	<i>Cephalopholis argus</i>	25		
Necker	Acanthuridae	<i>Acanthurus olivaceus</i>	73		
	Labridae	<i>Thalassoma ballieui</i>	12		
	Mullidae	<i>Parupeneus multifasciatus</i>	7		
	Serranidae	<i>Cephalopholis argus</i>	6		
Niihau	Acanthuridae	<i>Acanthurus triostegus</i>	8		
		<i>Ctenochaetus strigosus</i>	23		
	Holocentridae	<i>Myripristis berndti</i>	9		
	Labridae	<i>Bodianus bilunulatus</i>	8		
	Lutjanidae	<i>Lutjanus kasmira</i>	6		
Northwestern Hawaii Island (no specific location)	Serranidae	<i>Cephalopholis argus</i>	10		
	Acanthuridae	<i>Acanthurus triostegus</i>	32		
	Chaetodontidae	<i>Chaetodon lunulatus</i>	18		
		<i>Chaetodon miliaris</i>	30		
		<i>Chaetodon fremblii</i>	32		
Oahu	Holocentridae	<i>Myripristis berndti</i>	24		
	Acanthuridae	<i>Ctenochaetus strigosus</i>	6		
		<i>Acanthurus nigrofuscus</i>	8		
		<i>Zebrasoma flavescens</i>	14		
		<i>Acanthurus triostegus</i>	16		
		<i>Acanthurus nigroris</i>	44		
	Lutjanidae	<i>Lutjanus kasmira</i>	9		
P1B	Serranidae	<i>Cephalopholis argus</i>	8		
	Acanthuridae	<i>Acanthurus nigrofuscus</i>	12		
		<i>Ctenochaetus strigosus</i>	23		
	Scaridae	<i>Chlorurus sordidus</i>	15		
	Serranidae	<i>Cephalopholis argus</i>	7		
Pearl and Hermes Reef	Acanthuridae	<i>Acanthurus nigrofuscus</i>	12		
		<i>Acanthurus olivaceus</i>	29		
		<i>Acanthurus triostegus</i>	38		
		<i>Ctenochaetus strigosus</i>	45		

UH Hilo cont.

		<i>Acanthurus nigroris</i>	58		
	Chaetodontidae	<i>Chaetodon fremblii</i>	16		
		<i>Chaetodon lunulatus</i>	35		
		<i>Chaetodon miliaris</i>	40		
	Labridae	<i>Thalassoma purpureum</i>	6		
		<i>Bodianus bilunulatus</i>	13		
		<i>Coris venusta</i>	13		
		<i>Thalassoma ballieui</i>	95		
	Mullidae	<i>Parupeneus porphyreus</i>	5		
		<i>Parupeneus bifasciatus</i>	9		
		<i>Parupeneus multifasciatus</i>	22		
	Pomacentridae	<i>Dascyllus albisella</i>	13		
	Priacanthidae	<i>Priacanthus meeki</i>	22		
	Scaridae	<i>Chlorurus perspicillatus</i>	17		