LITERATURE CITED

- Adamczewska AM, Morris S (2001) Ecology and behavior of *Gecarcoidea natalis*, the Christmas Island red crab, during the annual breeding migration. Biological Bulletin, Marine Biological Laboratory, Woods Hole 200:305-320
- Aguilar-Perera A (1994) Preliminary observations of the spawning aggregation of Nassau grouper, *Epinephelus striatus*, at Mahahual, Quintana Roo, Mexico. Proceedings of the Gulf and Caribbean Fisheries Institute 43:112-122
- Aguilar-Perera A, Aguilar-Davila W (1996) A spawning aggregation of Nassau grouper *Epinephelus striatus* (Pisces: Serranidae) in the Mexican Caribbean. Environmental Biology of Fishes 45:351-361
- Allen GR, Munday PL (1996) Fish diversity of Kimbe Bay. In: Kimbe Bay rapid ecological assessment: the coral reefs of Kimbe Bay, The Nature Conservancy, Auckland. pp 107
- Alvey ME (1990) Aspects of the mating system and movement patterns of three *Thalassoma bifasciatum* (Bloch) populations in southwestern Puerto Rico. Masters thesis, University of Puerto Rico, Mayagiiez. pp 56

- Appeldoorn RS, Hensley DA, Shapiro DY (1994) Egg dispersal in a Caribbean coral reef fish, *Thalassoma bifasciatum*. II. Dispersal off the reef platform. Bulletin of Marine Science 54:271-280
- Baltz DM (1991) Introduced fishes in marine systems and inland seas. Biological Conservation 56:151-177
- Bannerot SP (1984) The dynamics of exploited groupers (Serranidae): an investigation of the protogynous hermaphroditic reproductive strategy. PhD thesis, University of Miami, Coral Gables. pp 393
- Bardach JE, Smith CL, Menzel DW (1958) Bermuda fisheries research program final report. Bermuda Trade Development Board, Hamilton. pp 59
- Barlow GW (1981) Patterns of parental investment, dispersal and size among coral reeffishes. Environmental Biology of Fishes 6:65-85
- Beets J, Friedlander A (1998) Evaluation of a conservation strategy: a spawning aggregation closure for red hind, *Epinephelus guttatus*, in the U.S. Virgin Islands. Environmental Biology of Fishes 55:91-98
- Beets JP, Friedlander A (1992) Stock analysis and management strategies for red hind, *Epinephelus guttatus*, in the U.S. Virgin Islands. Proceedings of the Gulf and Caribbean Fisheries Institute 42:66-80
- Bell LJ, Colin PL (1986) Mass spawning of *Caesio teres* (Pisces: Caesionidae) at Enewetak Atoll, Marshall Islands. Environmental Biology of Fishes 15:69-74
- Bell LJ, Moyer JT, Numachi K (1982) Morphological and genetic variation in Japanese populations of the anemonefish *Amphiprion clarkii*. Marine Biology 72:99-102
- Bolden SK (2000) Long-distance movement of a Nassau grouper (*Epinephelus striatus*) to a spawning aggregation in the Central Bahamas. Fishery Bulletin 98:642-645
- Bolden SK (2002) Nassau grouper (*Epinephelus striatus*, Pisces: Serranidae) movement in the Bahamas, as determined by ultrasonic telemetry. Dissertation Abstracts International Part B: Science and Engineering 62:4893
- Brown IW, Doherty PJ, Ferreira B, Keenan KC, McPherson G, Russ GR, Samoilys MA, Sumpton W (1994) Growth, reproduction and recruitment of Great Barrier Reef food fish stocks, Queensland Department of Primary Industries, Southern Fisheries Centre, FRDC Project 90/18
- Bullock LH, Murphy MD, Godcharles MF, Mitchell ME (1992) Age, growth, and reproduction of jewfish *Epinephelus itajara* in the eastern Gulf of Mexico. Fisheries Bulletin of the U.S. 90:243-249
- Burnett-Herkes J (1975) Contribution to the biology of the red hind, *Epinephelus guttatus*, a commercially important serranid fish from the tropical western Atlantic. PhD thesis, University of Miami, Coral Gables. pp 154
- Carlos GS, Samoilys MA (1993) An investigation of the occurrence of spawning aggregations of blue-spot coral trout (*Plectropomus laevis*) on the northern Great Barrier Reef, Report for Northern Fisheries Centre, Queensland Department of Primary Industries
- Carter HJ (1988a) Grouper mating ritual on a Caribbean reef. Underwater Naturalist 17:8-11
- Carter HJ (1988b) Moonlight mating of the multitudes. Animal Kingdom 92:62-69 Carter HJ (1989) Grouper sex in Belize. Natural History October 1989:60-69

- Carter HJ, Marrow GJ, Pryor V (1994) Aspects of the ecology and reproduction of Nassau grouper, *Epinephelus striatus*, off the coast of Belize, Central America. Proceedings of the Gulf and Caribbean Fisheries Institute 43:65-111
- Carter HJ, Perrine D (1994) A spawning aggregation of dog snapper, *Lutjanus jocu* (Pisces: Lutjanidae) in Belize, Central America. Bulletin of Marine Science 55:228-234
- Caspers H (1984) Spawning periodicity and habitat of the palolo worm *Eunice viridis* (Polychaeta: Eunicidae) in the Samoan Islands. Marine biology 79:229-236
- Chapman MR, Kramer DL (2000) Movements of fishes within and among fringing coral reefs in Barbados. Environmental Biology of Fishes 57:11-24
- Choat JH, Bellwood DR (1985) Interactions amongst herbivorous fishes on a coral reef: influence of spatial variation. Marine Biology 89:221-234
- Choat JH, Bellwood DR (1991) Reef fishes: their history and evolution. In: Sale PF (ed) The ecology of fishes on coral reefs. Academic Press, San Diego, p 39-66
- Claro R (1981) Ecologia y ciclo de vida de la biajaiba *Lutjanus synagris* (Linnaeus), en la platoforma Cubana. II. Biol. Pesq., Acad. Cienc. Cuba Inform. Cient.-Tec. 177:53
- Claro R, Lindeman KC (2003) Spawning aggregation sites of snapper and grouper species (Lutjanidae and Serranidae) on the insular shelf of Cuba. Gulf and Caribbean Research 14:91-106
- Claydon JAB (2004) Spawning aggregations of coral reef fishes: characteristics, hypotheses, threats and management. Oceanography and Marine Biology: An Annual Review 42:265-302
- Coleman FC, Koenig CC, Collins LA (1996) Reproductive styles of shallow-water grouper (Pisces: Serranidae) in the eastern Gulf of Mexico and the consequences of fishing spawning aggregations. Environmental Biology of Fishes 47:129-141
- Colin PL (1976) Filter-feeding and predation on the eggs of *Thalassoma* sp. by the scombrid fish *Rastrelliger kanagurta*. Copeia 1976:596-597
- Colin PL (1978) Daily and summer-winter variation in mass spawning of the striped parrotfish *Scarus croicensis*. Fisheries Bulletin 76:117-124
- Colin PL (1982) Aspects of the spawning of western Atlantic reef fishes. In: Huntsman GR, Nicholson WR, Fix WW, Jr. (eds) Workshop on biological bases for reef fishery management. NOAA Tech. Mem. NMFS-SEFC, St. Thomas, US Virgin Islands, p 69-80
- Colin PL (1985) Spawning of western Atlantic surgeonfishes. National Geographic Society Research Reports 18:243-250
- Colin PL (1992) Reproduction of the Nassau grouper, *Epinephelus striatus* (Pisces: Serranidae) and its relationship to environmental condition. Environmental Biology of Fishes 34:357-377
- Colin PL (1994) Preliminary investigations of reproductive activity of the jewfish, *Epinephelus itajara* (Pisces: Serranidae). Proceedings of the Gulf and Caribbean Fisheries Institute 43:138-147
- Colin PL (1995) Surface currents in Exuma Sound, Bahamas and adjacent areas with reference to potential larval transport. Bulletin of Marine Science 56:48-57
- Colin PL (1996) Longevity of some coral reef fish spawning aggregations. Copeia 1996:189-192

- Colin PL, Bell LJ (1991) Aspects of the spawning of labrid and scarid fishes (Pisces: Labroidei) at Enewetal Atoll, Marshall Islands with notes on other families. Environmental Biology of Fishes 31:229-260
- Colin PL, Clavijo IE (1978) Mass spawning of the spotted goatfish, *Pseudupeneus maculatus* (Bloch) (Pisces: Mullidae). Bulletin of Marine Science 28:780-782
- Colin PL, Clavijo IE (1988) Spawning activity of fishes producing pelagic eggs on a shelf edge coral reef, southwestern Puerto Rico. Bulletin of Marine Science 43:249-279
- Colin PL, Shapiro DY, Weiler D (1987) Aspects of the reproduction of two groupers, *Epinephelus guttatus* and *E. striatus* in the West Indies. Bulletin of Marine Science 40:220-230
- Coma R, Lasker HR (1997) Small-scale heterogeneity of fertilization success in a broadcast spawning octocoral. Journal of Experimental Marine Biology and Ecology 214:107-120
- Connell JH, Hughes TP, Wallace CC (1997) A 30-year study of coral abundance, recruitment, and disturbance at several scales in space and time. Ecological Monographs 67:461-488
- Conover DO, Kynard BE (1984) Field and laboratory observations of spawning periodicity and behaviour of a northern population of the Atlantic silverside, *Menidia menidia* (Pisces: Atherinidae). Environmental Biology of Fishes 11:161-171
- Craig AK (1966) Geography of fishing in British Honduras and adjacent coastal waters. Tech. Rep. Coastal Studies Lab., Louisiana State Univ. 28:143
- Craig PC (1996) Intertidal territoriality and time-budget of the surgeonfish, *Acanthurus lineatus*, in American Samoa. Environmental Biology of Fishes 46:27-36
- Craig PC (1998) Temporal spawning patterns of several surgeonfishes and wrasses in American Samoa. Pacific Science 52:35-39
- Danilowicz BS, Sale PF (1999) Relative intensity of predation on the French grunt, *Haemulon flavolineatum*, during diurnal, dusk, and nocturnal periods on a coral reef. Marine Biology 133:337-343
- Debelius H (2000) Massenlaich! Sport Diving, p 16-21
- DeCoursey PJ (1976) Biological rhythms in the marine environment. University of South Carolina Press, Columbia, South Carolina, USA. pp 283
- Denny MW, Shibata MF (1989) Consequences of surf-zone turbulence for settlement and external fertilization. American Naturalist 134:859-889
- Doherty PJ, Carleton JM (1997) The distribution and abundance of pelagic juvenile fish near Grub Reef, central Great Barrier Reef. Proceedings of the 8th International Coral Reef Symposium, p 1155-1160
- Doherty PJ, Planes S, Mather P (1995) Gene flow and larval duration in seven species of fish from the Great Barrier Reef. Ecology 76:2373-2391
- Doherty PJ, Williams DM, Sale PF (1985) The adaptive significance of larval dispersal in coral reef fishes. Environmental Biology of Fishes 12:81-90
- Domeier ML, Colin PL (1997) Tropical reef fish spawning aggregations: defined and reviewed. Bulletin of Marine Science 60:698-726
- Domeier ML, Colin PL, Donaldson TJ, Heyman WD, Pet JS, Russell M, Sadovy Y, Samoilys MA, Smith AJ, Yeeting BM, Smith S, Salm RV, Walker S (2002)

- Transforming coral reef conservation: reef fish spawning aggregations component. Working Group Report to The Nature Conservancy, The Nature Conservancy, Arlington, Virginia. pp 85
- Domeier ML, Koenig CC, Coleman FC (1996) Reproductive biology of the gray snapper (Lutjanidae: *Lutjanus griseus*) with notes on spawning for other western Atlantic lutjanids. In: Sanchez F, Munro JL, Pauly D (eds) Biology of tropical groupers and snappers. ICLARM Conf. Proc., Manila, p 189-201
- Donaldson TJ (1989) Facultative monogamy in obligate coral-dwelling hawkfishes (Cirrhitidae). Environmental Biology of Fishes 26:295-302
- Donaldson TJ (1990) Lek-like courtship by males, and multiple spawnings by females of *Synodus dermatogenys* (Synodontidae). Japanese Journal of Ichthyology 37:292-301
- Ebisawa A (1990) Reproductive biology of *Lethrinus nebulosus* (Pisces: Lethrinidae) around the Okinawa waters. Nippon Suisan Gakkai 56:1941-1954
- Eckrich CE, Owens DW (1995) Solitary versus arribada nesting in the olive ridley sea turtles (*Lepidochelys olivacea*): a test of the predator-satiation hypothesis. Herpetologica 51:349-354
- Emery AR (1972) Eddy formation from an oceanic island: ecological effects. Caribbean Journal of Science 12:121-128
- Emery AR (1973) Comparative ecology and functional osteology of fourteen damselfishes (Pisces: Pomacentridae) at Alligator Reef, Florida Keys. Bulletin of Marine Science 23:649-770
- Eristhee N, Oxenford HA (2001) Home range size and use of space by Bermuda chub *Kyphosus sectatrix* (L.) in two marine reserves in the Soufriere Marine Management Area, St Lucia, West Indies. Journal of Fish Biology 59:129-151
- Essington TE, Hodgson JR, Kitchell JF (2000) Role of satiation in the functional response of a piscivore, largemouth bass (*Micropterus salmoides*). Canadian Journal of Fisheries and Aquaculture Science 57:548-556
- Fautin DG, Allen GR (1992) A field guide to anemonefishes and their host anemones. Western Australian Museum, Perth. pp 159
- Fell PE (1974) Chapter 2: Porifera. In: Giese AC, Pearse JS (eds) Reproduction of marine invertebrates. Volume 1: Acoelomate & pseudocoelomate metazoans, Vol 1. Academic Press, New York, p 51-132
- Fine JC (1990) Groupers in love: spawning aggregations of Nassau grouper in Honduras. Sea Frontiers Jan.-Feb.:42-45
- Fine JC (1992) Greedy for Groupers. Wildlife Conservation Nov./Dec.:68-71
- Fitch WTS, Shapiro DY (1990) Spatial dispersion and non-migratory spawning in the bluehead wrasse, *Thalassoma bifasciatum*. Ethology 85:199-211
- Forward RB, Jr. (1987) Larval release rhythms of decapod crustaceans: an overview. Bulletin of Marine Science 41:165-176
- Froese R, Pauly D (2000) FishBase 2000: concepts, design and data sources. ICLARM, Los Baños, Laguna, Philippines. pp 344
- Fulton EA, Dault D, Mapstone BD, Sheaves M (2000) Spawning season influences on commercial catch rates: Computer simulation and *Plectropomus*, a case in point. Canadian Journal of Fisheries and Aquatic Science 56:1096-1108

- Garciá-Moliner GE (1986) Aspects of the social spacing, reproduction and sex reversal in the red hind, *Epinephelus guttatus*. Masters thesis, University of Puerto Rico, Mayagüez. pp 104
- Gilmore RG, Jones RS (1992) Color variation and associated behavior in the epinepheline groupers, *Mycteroperca microlepis* (Goode and Bean) and *M. phenax* (Jordan and Swain). Bulletin of Marine Science 51:83-103
- Gladstone W (1994) Lek-like spawning, parental care and mating periodicity of the triggerfish *Pseudobalistes flavimarginatus* (Balistidae). Environmental Biology of Fishes 39:249-257
- Gladstone W (1996) Unique annual aggregation of longnose parrotfish (*Hipposcarus harid*) at Farasan Island (Saudi Arabia, Red Sea). Copeia 2:483-485
- Groot C, Margolis L (1991) Pacific salmon life histories. University of British Columbia Press, Vancouver. pp 564
- Hall KC, Hanlon RT (2002) Principal features of the mating system of a large spawning aggregation of the giant Australian cuttlefish *Sepia apama* (Mollusca: Cephalopoda). Marine Biology 140:533-545
- Hasse JJ, Madraisau BB, McVey JP (1977) Some aspects of the life history of *Siganus canaliculatus* (Park) (Pisces: Siganidae) in Palau. Micronesica 13:297-312
- Hattori S (1970) Preliminary note on the structure of the Kuroshio from the biological point of view, with special reference to pelagic fish larvae. In: Marr JC (ed) The Kuroshio: a syposium on the Japan Current. East-West Center Press, Honolulu
- Helfrich P, Allen PM (1975) Observations on the spawning mullet, *Crenimugil crenilabis* (Forskål), at Enewetak Atoll, Marshall Islands. Micronesica 11:219-225
- Hendrickson JR (1980) The ecological strategies of sea turtles. American Zoologist 20:597-608
- Hensley DA, Appeldoorn RS, Shapiro DY, Ray M, Turingan RG (1994) Egg dispersal in a Caribbean coral reef fish, *Thalassoma bifasciatum*.I. Dispersal over the reef platform. Bulletin of Marine Science 54:256-270
- Heyman WD, Graham RT, Kjerfve B, Johannes RE (2001) Whale sharks *Rhincodon typus* aggregate to feed on fish spawn in Belize. Marine Ecology Progress Series 215:275-282
- Hobson ES (1972) Activity of Hawaiian reef fishes during the evening and morning transitions between daylight and darkness. Fishery Bulletin of the U.S. 70:715-740
- Hobson ES (1973) Diel feeding migrations in tropical reef fishes. Helgolander wissenschaftliche Meeresuntersuchungen 24:361-370
- Hobson ES (1974) Feeding relationships of teleostean fishes on coral reef in Kona, Hawaii. Fisheries Bulletin 72:915-1031
- Hobson ES (1975) Feeding patterns among tropical reef fishes. American Scientist 63:382-392
- Hobson ES (1991) Trophic relationships of fishes specialized to feed on zooplankters above coral reefs. In: Sale PF (ed) The ecology of fishes on coral reefs. Academic Press, San Diego, p 69-119
- Hobson ES, Chess JR (1978) Trophic relationships among fishes and plankton in the lagoon at Enewetak Atoll, Marshall Islands. Fisheries Bulletin 76:133-153

- Holland ND (1974) Chapter 4: Echinodermata: Crinoidea. In: Giese AC, Pearse JS (eds) Reproduction of marine invertebrates. Volume 6: echinoderms & lophophorates, Vol 4. Academic, New York, p 247-292
- Holling CS (1959) Some characteristics of simple types of predation and parasitism. Canadian Entomologist 91:385-398
- Hourigan TF, Reese ES (1987) Mid-ocean isolation and the evolution of Hawaiian reef fishes. Trends in Ecology and Evolution 2:187-191
- Hugie DM, Dill LM (1994) Fish and game: a game theoretic approach to habitat selection by predators and prey. Journal of Fish Biology 45:151-169
- Hunt von Herbing I, Hunte W (1991) Spawning and recruitment of the bluehead wrasse *Thalassoma bifasciatum* in Barbados, West Indies. Marine Ecology Progress Series 72:49-58
- Itano D, Buckley T (1988) Observations of the mass spawning of corals and palolo (*Eunice viridis*) in American Samoa. Department of Marine and Wildlife Resources, American Samoa 1988:14
- Johannes RE (1978) Reproductive strategies of coastal marine fishes in the tropics. Environmental Biology of Fishes 3:65-84
- Johannes RE (1981) Words of the lagoon: fishing and marine lore in the Palau District of Micronesia. University of California Press, Berkley, CA. pp 245
- Johannes RE (1988) Spawning aggregation of the grouper, *Plectropomus areolatus* (Ruppel) in the Solomon Islands. Proceedings of the 6th International Coral Reef Syposium, Australia, 1988, p 751-755
- Johannes RE (1997) Grouper spawning aggregations need protection. Secretariat of the Pacific Community Live Reef Fish Information Bulletin 3:13-14
- Johannes RE, Hviding E (2000) Traditional knowledge possessed by the fishers of Marovo Lagoon, Solomon Islands, concerning fish aggregating behaviour. Secretariat of the Pacific Community Traditional Marine Resource Management and Knowledge Bulletin 12:22
- Johannes RE, Lam M (1999) The life reef food fish trade in the Solomon Islands. Secretariat of the Pacific Community Live Reef Fish Information Bulletin 5:8-15
- Johannes RE, Riepen M (1995) Environmental, economic and social implications of the live reef fish trade in Asia and the Western Pacific. Report to The Nature Conservancy and the South Pacific Commission, The Nature Conservancy, Arlington, Virginia. pp 83
- Johannes RE, Squire L (1988) Spawning aggregations of coral trout and maori wrasse on the Great Barrier Reef Marine Park, Unpublished report, CSIRO Hobart, QDPI Cairns. pp 13
- Johannes RE, Squire L, Graham RT (1994) Developing a protocol for monitoring spawning aggregations of Palauan serranids to facilitate the formulation and evaluation of strategies for their management, First progress report, August 1994, FFA Report #94/28, South Pacific Forum Fisheries Agency, Honiara.
- Johannes RE, Squire L, Graham T, Sadovy Y, Rengul H (1999) Spawning aggregations of groupers (Serranidae) in Palau. Marine Conservation Research Publication No.1, The Nature Conservancy, Arlington, Virginia. pp 144
- Johannes RE, Yeeting BM (2001) I-Kiribati knowledge and management of Tarawa's lagoon resources. Atoll Research Bulletin 489:24

- Jones GP (1980) Growth and reproduction in the protogynous hermaphrodite *Pseudolabrus celidotus* (Pisces: Labridae) in New Zealand. Copeia 1980:660-675
- Jones GP, McCormick MI, Srinivasan M, Eagle JV (2004) Coral decline threatens fish biodiversity in marine reserves. Proceedings of the National Academy of Sciences of the United States of America 101:8251-8253
- Jones GP, Milicich MJ, Emslie MJ, Lunow C (1999) Self-recruitment in a coral reef fish population. Nature 402:802-804
- Jones ML, Swartz SL, Leatherwood S (1984) The gray whale *Eschrichtius robustus*. Academic Press, Inc., Orlando, Florida. pp 600
- Kellmeyer K, Salmon M (2001) Hatching rhythms of *Uca thayeri* Rathbun: timing in semidiurnal and mixed tidal regimes. Journal of Experimental Marine Biology & Ecology 260:169-183
- Klemesten A, Amundsen P-A, Dempson JB, Jonsson B, Jonsson N, O'Connel MF, Mortensen E (2003) Atlantic samlon *Salmo salar* L., brown trout *Salmo trutta* L. and Arctic charr *Salvelinus alpinus* (L.): a review of aspects of their life histories. Ecology of Freshwater Fish 12:1-59
- Koenig CC, Coleman FC, Collins LA, Sadovy Y, Colin PL (1996) Reproduction of gag, (*Mycteroperca microlepis*) (Pisces: Serranidae) in the eastern Gulf of Mexico and the consequences of fish spawning aggregations. In: Arreguin-Sanchez F, Munro JL, Balgos MC, Pauly D (eds) ICLARM Conference Proceedings. ICLARM, Makati City (Philippines), Manila, p 307-323
- Kuiter RH, Debelius H (1994) Southeast Asia tropical fish guide: Indonesia Philippines Vietnam Malaysia Singapore Thailand Andaman Sea. IKAN-Unterwasserarchiv, Frankfurt. pp 321
- Kuwamura T (1981) Diurnal periodicity of spawning activity in free-spawning labrid fishes. Japanese Journal of Ichthyology 28:343-348
- Lagler KF, Bardach JE, Miller RR, Passino DRM (1977) Ichthyology. Wiley & Sons, New York. pp 506
- Lasker HR, Brazeau DA, Calderon J, Coffroth MA, Coma R, Kim K (1996) *In situ* rates of fertilization among broadcast spawning gorgonian corals. Biological Bulletin 190:45-55
- Leis JM, Carsonewart BM (1997) In Situ Swimming Speeds of the Late Pelagic Larvae of Some Indo-Pacific Coral-Reef Fishes. Marine Ecology-Progress Series 159:165-174
- Levitan DR, Young CM (1995) Reproductive success in large populations: empirical measures and theoretical predictions of fertilization in the sea biscuit *Clypeaster rosaceus*. Journal of Experimental Marine Biology and Ecology 190:221-241
- Lewis AR (1997) Recruitment and post-recruit immigration affect the local population size of coral reef fishes. Coral Reefs 16:139-149
- Lindeman KC, Pugliese P, Waugh GT, Ault JS (2000) Developmental patterns within a multispecies reef fishery: management applications for essential fish habitats and protected areas. Bulletin of Marine Science 66:929-956
- Lobel PS (1978) Diel, lunar, and seasonal periodicity in the reproductive behaviour of the pomacanthid fish, *Centropyge potteri*, and some other reef fishes in Hawaii. Pacific Science 32:193-207

- Lobel PS, Neudecker S (1985) Diurnal periodicity of spawning activity by the hamlet fish, *Hypoplectrus guttavarius* (Serranidae). In: Reaka ML (ed) The ecology of coral reefs, Vol 3. NOAA Undersea Research Program, Rockville, MD, p 71-86
- Lobel PS, Robinson AR (1988) Larval fishes and zooplankton in a cyclonic eddy in Hawaiian waters. Journal of Plankton Research 10:1209-1233
- Lott DF (1991) Inraspecific variation in the social systems of wild vertebrates. Cambridge University Press, Cambridge. pp 238
- Loubens G (1980) Biologie de quelques espèces de poissons de lagon néo-calidonien.II. Sexualité et reproduction. Cahiers de l'Indo-Pacifique 2:41-72
- Mazeroll AI, Montgomery WL (1998) Daily migrations of a coral reef fish in the Red Sea (Gulf of Aqaba, Israel): initiation and orientation. Copeia 4:893-905
- McCormick MI (2003) Consumption of coral propagules after mass spawning enhances larval quality of damselfish through maternal effects. Oecologia 136:37-45
- Mertz DB (1971) The mathematical demography of the California condor population. American Naturalist 105:437-453
- Meyer KA (1977) Reproductive behaviour and patterns of sexuality in the Japanese labrid fish *Thalassoma cupido*. Japanese Journal of Ichthyology 24:101-112
- Moe MA, Jr. (1963) A survey of offshore fishing in Florida. Prof. Papers Ser., Mar. Lab. Fla. 4:1-1117
- Mohr CO (1947) Table of equivalent populations of North American mammals. American Midland Naturalist 37:223-249
- Morgan SG (1987) Adaptive significance of hatching rhythms and dispersal patterns of estuarine crab larvae: avoidance of physiological stress by larval export? Journal of Experimental Marine Biology & Ecology 113:71-78
- Morgan SG (1996) Plasiticity in reproductive timing by crabs in adjacent tidal regimes. Marine Ecology Progress Series 139:105-118
- Morgan SG, Christy JH (1994) Plasticity, constraint, and optimality in reproductive timing. Ecology 75:2185-2203
- Moyer JT (1987) Quantitative observations of predation during spawning rushes of the labrid fish *Thalassoma cupido* at Miyake-jima Japan. Japanese Journal of Ichthyology 34:76-81
- Moyer JT (1989) Reef channels as spawning sites for fishes on the Shiraho coral reef, Ishigaki Island, Japan. Japanese Journal of Ichthyology 36:371-375
- Moyer JT, Thresher RE, Colin PL (1983) Courtship, spawning and inferred soical organisation of American angelfishes (Genera *Pomacanthus*, *Holacanthus* and *Centropyge*; Pomacanthidae). Environmental Biology of Fishes 9:25-39
- Moyer JT, Zaiser MJ (1981) Social organization and spawning behavior of the pteroine fish *Dendrochirus zebra* at Miyake-Jima, Japan. Japanese Journal of Ichthyology 28:52-69
- Mueller KW (1994) Gregarious behavior in the mutton snapper in the Exuma Cays. Bahamas Journal of Science 1:17-22
- Munday PL, Jones GP (1998) The ecological implications of small body size among coral-reef fishes. Oceanography and Marine Biology: An Annual Review 36:373-411

- Munday PL, Jones GP, Caley MJ (1997) Habitat specialisation and the distribution and abundance of coral-dwelling gobies. Marine Ecology Progress Series 152:227-239
- Myers RF (1989) Micronesian reef fishes. Coral Graphics, Guam. pp 298
- Myrberg AA, Montgomery WL, Fishelson L (1988) The reproductive behavior of *Acanthurus nigrofuscus* (Forskål) and other surgeonfishes (Fam. Acanthuridae) off Eilat, Israel (Gulf of Aqaba, Red Sea). Ethology 31:31-61
- Nakazono A (1979) Studies of sex reversal and spawning behavior of five species of Japanese labrid fishes. Rpt. Fish. Res. Lab., Kyushu Univ. 4:1-64
- Nelson JS (1994) Fishes of the world. John Wiley & Sons Inc., New York. pp 467-540 Nemtzov SC, Clark E (1994) Intraspecific egg predation by male razorfishes (Labridae)
- during broadcast spawning: Filial cannibalism of intra-pair parasitism? Bulletin of Marine Science 55:133-141
- Olsen DA, LaPlace JA (1978) A study of a Virgin Island grouper fishery based on a breeding aggregation. Proceedings of the Gulf and Caribbean Fisheries Institute 31:130-144
- Olsen DA, LaPlace JA (1979) A study of a Virgin Island grouper fishery based on breeding aggregation. Proceedings of the Gulf and Caribbean Fisheries Institute 31:130-144
- Palmer JD (1932) Biological clocks in marine organisms. Wiley-Interscience Publication, John Wiley & Sons, New York, London, Sydney, Toronto. pp 173
- Passfield K (1996) Notes on grouper spawning aggregations in Tongareva, Cook Islands. SPC Traditional Resource Management and Knowledge Bulletin 7:20
- Patton WK (1994) Distribution and ecology of animals associated with branching corals (*Acropora* spp.) from the Great Barrier Reef, Australia. Bulletin of Marine Science 55:193-211
- Pennington JT (1985) The ecology of fertilization of echinoid eggs: the consequences of sperm dilution, adult aggregation, and synchronous spawning. Biological Bulletin 169:417-430
- Petersen CW, Warner RR, Cohen S, Hess HC, Sewell AT (1992) Variable pelagic fertilization success: implications for mate choice and spatial patterns of mating. Ecology 73:391-401
- Petersen CW, Warner RR, Shapiro DY, Marconato A (2001) Components of fertilization success in the bluehead wrasse, *Thalassoma bifasciatum*. Behavioral Ecology 12:237-245
- Planes S (1993) Genetic differentiation in relation to restricted larval dispersal of the convict surgeonfish Acanthurus triostegus in French Polynesia. Marine Ecology-Progress Series 98:237-246.
- Plotkin PT, Rostal DC, Byles RA, Owens DW (1997) Reproductive and developmental synchrony in female *Lepidochelys olivacea*. Journal of Herpetology 31:17-22
- Pollock BR (1984) Relations between migration, reproduction and nutrition in yellowfin bream *Acanthopagrus australis*. Marine Ecology Progress Series 19:17-23
- Popper D, Fishelson L (1973) Ecology and behaviour of *Anthias squamipinnis* (Peters, 1855)(Anthiidae, Teleostei) in the coral habitat of Eilat (Red Sea). Journal of Experimental Zoology 184:409-424

- Potts GW, Wootton RJ (1984) Fish reproduction: strategies and tactics. Academic Press, London. pp 410
- Pratchett MS, Gust N, Goby G, Klanten SO (2001) Consumption of coral propagules represents a significant trophic link between corals and reef fish. Coral Reefs 20:13-17
- Rahman MS, Takemura A, Park YJ, Takano K (2003) Lunar cycle in the reproductive activity in the forktail rabbitfish. Fish Physiology and Biochemistry 28:443-444
- Randall JE (1961a) A contribution to the biology of the convict surgeonfish of the Hawaiian Islands, *Acanthurus triostegus sandvicensis*. Pacific Science 15:215-272
- Randall JE (1961b) Observations on the spawning of surgeonfishes (Acanthuridae) in the Society Islands. Copeia 1961:237-238
- Randall JE, Allen GR, Steene RC (1990) Fishes on the Great Barrier Reef and Coral Sea. University of Hawaii Press, Honolulu. pp 507
- Randall JE, Randall HA (1963) The spawning and early development of the Atlantic parrotfish, *Sparisoma rubripinne*, with notes on other scarid and labrid fishes. Zoologica 48:49-60
- Reshetnikov YS, Claro RM (1976) Cycles and biological processes in tropical fishes with reference to *Lutjanus synagris*. Journal of Ichthyology 16:43-65
- Rhodes KL (2002) Final Report and Recommendations for Management of Spawning Aggregations of Grouper (Serranidae: Epinephelinae) in Pohnpei, Federated States of Micronesia., Unpublished report to the Pohnpei Sate Government. pp 26
- Rhodes KL, Sadovy Y (2002) Temporal and spatial trends in spawning aggregations of camouflage grouper, *Epinephelus polyphekadion*, in Pohnpei, Micronesia. Environmental Biology of Fishes 63:27-39
- Risk MJ (1972) Fish diversity on a coral reef in the Virgin Islands. Atoll Research Bulletin 193:1-6
- Roberts CM (1997) Connectivity and Management of Caribbean Coral Reefs. Science 278:1454-1457
- Robertson DR (1983) On the spawning behaviour and spawning cycles of eight surgeonfishes (Acanthuridae) from the Indo-Pacific. Environmental Biology of Fishes 9:193-223
- Robertson DR, Gaines SD (1986) Interference competition structures habitat use in a local assemblage of coral reef surgeonfishes. Ecology 67:1372-1383
- Robertson DR, Hoffman SG (1977) The roles of female mate choice and predation in the mating systems of some tropical labroid fishes. Zeitshrift fur Tierpsychologie 45:298-320
- Robertson DR, Lassig B (1980) Spatial distribution patterns of coexistence of a group of territorial damselfishes from the Great Barrier Reef. Bulletin of Marine Science 30
- Robertson DR, Polunin NVC (1981) Coexistence: symbiotic sharing of feeding territories and algal food by some coral reef fishes from the western Indian Ocean. Marine Biology 62:185-195
- Roff DA (1991) Life history consequences of bioenergetic and biochemical constraints on migration. American Zoologist 31:205-215

- Rojas LE (1960) Estudios estadisticos y biologicos sobre el pargo criollo, *Lutjanus analis*. Cent. Ivest. Pesq., Notas Sobre Invest. 2:16
- Russell M (2001) Spawning aggregations of reef fishes on the Great Barrier Reef: implications for management, Great Barrier Reef Marine Park Authority, Townsville. pp 37
- Sadovy Y (1994) Grouper stocks of the western central Atlantic: the need for management and management needs. Proceedings of the Gulf and Caribbean Fisheries Institute 43:43-65
- Sadovy Y (1996) Reproduction in reef fishery species. In: Polunin NVC, Roberts CM (eds) Reef fisheries. Chapman & Hall, London, p 15-60
- Sadovy Y, Colin PL, Domeier ML (1994a) Aggregation and spawning of the tiger grouper, *Mycteroperca tigris* (Pisces: Serranidae). Copeia 1994:511-516
- Sadovy Y, Eklund A-M (1999) Synopsis of biological data on the Nassau grouper, *Epinephelus striatus* (Bloch, 1972), and the jewfish, *E. itajara* (Lichtenstein, 1822). NOAA Tech. Mem. NMFS 146:1-65
- Sadovy Y, Rosario A, Román A (1994b) Reproduction in an aggregating grouper, the red hind, *Epinephelus guttatus*. Environmental Biology of Fishes 41:269-286
- Sala E, Aburto-Oropeza O, Paredes G, Thompson G (2003) Spawning aggregations and reproductive behaviour of reef fishes in the Gulf of California. Bulletin of Marine Science 72:103-121
- Sala E, Ballesteros E, Starr RM (2001) Rapid decline of Nassau grouper spawning aggregations in Belize: fishery management and conservation needs. Fisheries 26:23-30
- Sale PF (1971) Extremely limited home range in a coral reef fish, *Dascyllus aruanus* (Pisces; Pomacentridae). Copeia 1971:324-327
- Sale PF (1998) Appropriate spatial scales for studies of reef-fish ecology. Australian Journal of Ecology 23:202-208
- Samoilys MA (1997) Periodicity of spawning aggregations of coral trout, *Plectropomus leopardus* (Pisces: Serranidae) on the northern Great Barrier Reef. Marine Ecology Progress Series 160:149-159
- Samoilys MA (2000) Reproductive dynamics of an exploited serranid on the Great Barrier Reef. PhD thesis, James Cook University, Townsville. pp 106
- Samoilys MA, Squire L (2002) Two responses to: the live fish trade on Queensland's Great Barrier Reef: changes to historical fishing practices. Live Reef Fish Information Bulletin, Secretariat of the Pacific Community 10:18-21
- Samoilys MA, Squire LC (1994) Preliminary observations on the spawning behavior of coral trout, *Plectropomus leopardus* (Pisces: Serranidae), on the Great Barrier Reef. Bulletin of Marine Science 54:332-342
- Sancho G (2000) Predatory behaviours of *Caranx melampygus* (Carangidae) feeding on spawning reef fishes: a novel ambushing strategy. Bulletin of Marine Science 66:487-496
- Sancho G, Petersen CW, Lobel PS (2000a) Predator-prey relations at a spawning aggregation site of coral reef fishes. Marine Ecology Progress Series 203:275-288
- Sancho G, Solow AR, Lobel PS (2000b) Environmental influences on the diel timing of spawning in coral reef fishes. Marine Ecology Progress Series 206:193-212

- Schaffer WM (1974) Selection of optimal life histories: the effects of age structure. Ecology 5:291-303
- Schärer L, Robertson DR (1999) Sperm and milt characteristics and male v. female gametic investment in the Caribbean reef fish, *Thalassoma bifasciatum*. Journal of Fish Biology 55:329-343
- Schroeder WC (1924) Fisheries of Key West and the clam industry of southern Florida. Appendix XII to the Rep. U.S. Comm. Fish. 1923, Doc. No. 962:1-74
- Schultz ET, Cowen RK (1994) Recruitment of coral-reef fishes to Bermuda: Local retention or long-distance transport? Marine Ecology Progress Series 109:15-28
- SCRFA (2004) Spawning aggregation database of the Society for the Conservation of Reef Fish Aggregations. http://www.scrfa.org.
- Shapiro DY (1991) Intraspecific variability in social systems of coral reef fishes. In: Sale PF (ed) The ecology of fishes on coral reefs. Academic Press, San Diego, p 331-355
- Shapiro DY, Appeldoorn RS, Hensley DA, Ray M (1997) Water flow and spawning time in a coral reef fish. 8th International Coral Reef Symposium, p 1121-1126
- Shapiro DY, Hensley DA, Appeldoorn RS (1988) Pelagic spawning and egg transport in coral-reef fishes: a skeptical overview. Environmental Biology of Fishes 22:3-14
- Shapiro DY, Rasotto MB (1993) Sex differentiation and gonadal development in the diandric protogynous wrasse, *Thalassoma bifasciatum*. Journal of the Zoological Society of London 230:231-245
- Shapiro DY, Sadovy Y, McGehee MA (1993) Size, composition, and spatial structure of the annual spawning aggregation of the red hind, *Epinephelus guttatus* (Pisces: Serranidae). Copeia 1993:399-406
- Sheaves MJ, Molony BW, Tobin AJ (1999) Spawning migrations and local movements of a tropical sparid fish. Marine Biology 133:123-128
- Shibuno T, Gushima K, Kakuda S (1993) Female spawning migrations of the protogynous wrasse, *Halichoeres marginatus*. Japanese Journal of Ichthyology 39:357-362
- Shima J (1999) Variability in relative importance of determinants of reef fish recruitment. Ecology Letters 2:304-310
- Sinclair M (1988) Marine populations: an essay on population regulation and speciation. Washington Sea Grant Publication, Seattle.
- Sluka RD (2000) Grouper and Napoleon wrasse ecology in Laamu Atoll, republic of Maldives: Part 1. Habitat, behavior, and movement patterns. Atoll Research Bulletin 491:1-26
- Smith CL (1971) A revision of the American groupers: *Epinephelus* and allied genera. Bulletin of the American Museum of Natural History 146:67-241
- Smith CL (1972) A spawning aggregation of Nassau grouper, *Epinephelus striatus* (Bloch). Trans. Am. Fish. Soc. 101:257-261
- Sokal RR, Rohlf FJ (1995) Biometry: the principles and practice of statistics in biological research. W.H. Freedman & company, New York. pp 887
- Sponaugle S, Cowen RK, Shanks A, Morgan SG, Leis JM, Pineda J, Boehlert GW, Kingsford MJ, Lindeman KC, Grimes CB, Munro JL (2002) Predicting self-recruitment in marine populations: biophysical correlates and mechanisms. Bulletin of Marine Science 70:341-375

- Stearns SC (1976) Life-history tactics: a review of the ideas. Quarterly Review of Biology 51:3-47
- Stearns SC (1992) The evolution of life histories. Oxford University Press, Oxford. pp 249
- Stillman JH, Barnwell FH (2004) Relationship of daily and circatidal activity rhythms of the fiddler crab, *Uca princeps*, to the harmonic structure of semidiurnal and mixed tides. Marine Biology 144:473-482
- Stobutzki IC (1997) Energetic Cost of Sustained Swimming in the Late Pelagic Stages of Reef Fishes. Marine Ecology-Progress Series 152:249-259
- Stobutzki IC (1998) Interspecific Variation in Sustained Swimming Ability of Late Pelagic Stage Reef Fish from Two Families (Pomacentridae and Chaetodontidae). Coral Reefs 17:111-119
- Stobutzki IC, Bellwood DR (1994) An Analysis of the Sustained Swimming Abilities of Pre-Settlement and Post-Settlement Coral Reef Fishes. Journal of Experimental Marine Biology & Ecology 175:275-286
- Stobutzki IC, Bellwood DR (1997) Sustained Swimming Abilities of the Late Pelagic Stages of Coral Reef Fishes. Marine Ecology-Progress Series 149:35-41
- Stobutzki IC, Bellwood DR (1998) Nocturnal Orientation to Reefs by Late Pelagic Stage Coral Reef Fishes. Coral Reefs 17:103-110
- Swearer SE, Caselle JE, Lea DW, Weaver RR (1999) Larval retention and recruitment in an island population of a coral-reef fish. Nature 402:799-802
- Swearer SE, Shima J, Hellberg ME, Thorrold SR, Jones GP, Robertson DR, Morgan SG, Selkoe KA, Ruiz GM, Warner RR (2002) Evidence of self-recruitment in demersal marine populations. Bulletin of Marine Science 70:251-271
- Thompson RL, Munro JL (1983) The biology, ecology and bionomics of the hinds and groupers, Serranidae. In: Munro JL (ed) Caribbean Coral Reef Fishery Resources, ICLARM Stud. and Rev. 7, p 59-81
- Thresher RE (1982) Courtship and spawning in the emperor angelfish *Pomacanthus imperator*, with comments on reproduction by other pomacanthid fishes. Marine Biology 70:149-156
- Thresher RE (1984) Reproduction in reef fishes. T.F.H. Publications, Neptune City, N.J. pp 399
- Thresher RE (1991) Geographic variability in the ecology of coral reef fishes: evidence, evolution and possible implications. In: Sale PF (ed) The ecology of fishes on coral reefs. Academic Press, San Diego, p 401-436
- Thresher RE, Brothers EB (1985) Reproductive ecology and biogeography of Indo-West Pacific angelfishes (Pisces: Pomacanthidae). Evolution 39:878-887
- Tribble GW (1982) Social organisms, patterns of sexuality and behaviour of the wrasse *Coris dorsomaculata* at Miyake-Jima, Japan. Environmental Biology of Fishes 7:29-38
- Tucker JW, Jr., Bush PG, Slaybaugh ST (1993) Reproductive patterns of Cayman Islands Nassau grouper (*Epinephelus striatus*) populations. Bulletin of Marine Science 52:961-969
- Warner RR (1988a) Traditionality of mating-site preference in a coral reef fish. Nature 335:719-721

- Warner RR (1988b) Traditionality of mating-site preferences in a coral reef fish. Nature 335:719-721
- Warner RR (1990a) Male versus female influences on mating-site determination in a coral reef fish. Animal Behaviour 39:540-548
- Warner RR (1990b) Resource assessment versus tradition in mating-site determination. American Naturalist 135:205-217
- Warner RR (1991) The use of phenotypic plasticity in coral reef fishes as tests of theory in evolutionary ecology. In: Sale PF (ed) The ecology of fishes on coral reefs. Academic Press, San Diego, p 387-398
- Warner RR (1995) Large mating aggregations and daily long-distance spawning migrations in the bluehead wrasse, *Thalassoma bifasciatum*. Environmental Biology of Fishes 44:337-345
- Warner RR (1997) Evolutionary ecology: how to reconcile pelagic dispersal with local adaptation? Coral Reefs 16:S115-S120
- Warner RR (1998) The role of extreme iteroparity and risk avoidance in the evolution of mating systems. Journal of Fish Biology 53:82-93
- Warner RR, Hoffman KS (1980) Local population size as a determinant of mating system and sexual composition in two tropical reef fishes (*Thalassoma* spp.). Evolution 34:508-518
- Warner RR, Robertson DR (1978) Sexual patterns in the labroid fishes of the western Caribbean, I:The wrasses. Smithsonian Contributions to Zoology 254:1-27
- Whaylen L, Pattengill-Semmens CV, Semmens BX, Bush PG, Boardman MR (2004) Observations of a Nassau grouper, *Epinephelus striatus*, spawning aggregation site in Little Cayman, Cayman Islands, including multi-species spawning information. Environmental Biology of Fishes 70:305-313
- Williams KS, Smith KG, Stephen FM (1993) Emergence of 13-yr periodical cicadas (Cicadidae: Magicicada): Phenology, mortality, and predator satiation. Ecology 74:1143-1152
- Willis BL, Babcock RC, Harrison PL, Oliver JK (1985) Patterns in the mass spawning of corals on the Great Barrier Reef from 1981 to 1984. In: Delesalle B, Galzin R, Salvat B (eds) The 5th International Coral Reef Congress, Tahiti, French Polynesia, p 343-348
- Yogo YA, Nakazono A, Tsukahara J (1982) Ecological studies on the spawning of the parrotfish *Scarus sordidus* (Forsskål). Sci. Bull. Fac. Agr. Kyushu Univ. 34:105-114
- Zar JH (1999) Biostatistical analysis. Prentice Hall International, Inc., New Jersey. pp 663
- Zeller DC (1998) Spawning aggregations: patterns of movement of the coral trout *Plectropomus leopardus* (Serranidae) as determined by ultrasonic telemetry. Marine Ecology Progress Series 162:253-263