

Summary Table of Cobia, ( <u>Rachycentron canadum</u> ) life history for the Gulf of Mexico. Associations and interactions with environmental and habitat variables are listed with citations.												
Life Stage	Season	Location	Temp(°C)	Salinity(ppt)	Oxygen	Depth(m)	Trophic relationships		Habitat Associations and Interactions			Production
							Food	Predators	Habitat Selection	Growth	Mortality	
Eggs Fertilized (1.2-1.5mm diameter); pelagic	Summer. Hatch within 36 hours from fertilization	Crystal R, FL (estuary). Chesapeake Bay and contiguous waters of the Atlantic Ocean; off Hatteras, N.C. (along the edge of the Gulf Stream); Newport R., N.C. (estuary)	28.1-29.7°C. Highest hatchery rates (lab) occurred at 26.5°C	30.5-34.1ppt 23ppt minimum (field). Highest hatching rates (lab) 33-35ppt		Top meter of water column drifting with current			Estuarine edge of Gulf stream. Upper strata			
Citations	1,2,25,26,27,28	2,27,28,35	2,28	2,9,28		2,9,26			2,27,28,35			
Larvae 2.6-2.0mm SL	Summer: May-Sept	Crystal R. FL (estuary). Typically in offshore shelf waters of N. GOM	24.2-32.0°C. High: 36.7°C.	18.9-37.7ppt. 27.8-37.7ppt. Laboratory rearing as low as 19ppt		3.1-300m and surface waters	Lab: Wild zooplankton, dominated by copepods		Estuarine, offshore shelf waters	Attained SL of 20mm in 22 days (lab)		
Citation	1,2,3,4,9,28	1,2,3,4,29	2	2,28,9		2,9	1,28		1,2,3,4	28		
Pre-Juvenile (20-25mm SL)	Summer: May-July	Coastal waters offshore shelf of N. GOM. Jupiter Inlet, FL (22mm SL)	25.9-30.3°C 19.6-25.2>30.0°C	28.9-30.2ppt 22.5-36.4ppt		11-53m. In or near surface waters (S. Atl)	Lab: Wild zooplankton, dominated by copepods		Coastal waters, offshore shelf	Attained SL of 25mm in 25 days(lab)		
Citation	1,2,4	1,2,4,30,31	1,2,30,31	1,2,30,31		2,4,9	1,28		1,2,4,30,31	28		
Early Juveniles (27-55mm SL)	April-July. Summer	Coastal waters, offshore shelf of N. GOM. Off NJ, NC-FL	16.8-25.2°C (S. Atl)	30.0-36.4ppt (S. Atl)		5-300m. In or near surface waters (S. Atl)	Lab: <u>Gambusia</u> shrimp and fish parts		Coastal waters, offshore shelf	Attained ~55mm SL by 50 days (lab)		
	1,4,28,31	1,4,32,30	1,30,32	1,30,32		1,4,9	28		1,4,30,32	28		

Citations 9, 25-37 are U.S. East Coast information sources.

Cobia, ( <i>Rachycentron canadum</i> ) cont.												
							Trophic relationships		Habitat Associations and Interactions			
Life Stage	Season	Location	Temp(°C)	Salinity(ppt)	Oxygen	Depth(m)	Food	Predators	Habitat Selection	Growth	Mortality	Production
Late Juveniles	May-Oct. Summer-Fall	Coastal waters, offshore shelf. Off Virginia				6-9m	Lab: Shrimp, fish parts. Wild: Carnivorous fish, shrimp, squid.	<u>Coryphaena hippurus</u>	Coastal waters, offshore shelf	Attained 231mm SL by 130 days (lab)		
Citations	4,5,6,7,8,9,10,14,26	4,5,6,7,8,9,10,11,26				4,12,13	13,28	1,24,37	4,5,6,7,8,9,10,11	28		
Adults	<u>N. Gulf:</u> Mar-Oct Seasonal Migration. <u>S. Gulf:</u> S. FL: Nov-Mar Uncommon in summer <u>Ches. Bay:</u> May-Oct Seasonal Mig.:N->S, Spg/Fall	Coastal waters and offshore waters.	23.0-28.0°C 19.6-25.2°C (S. Atl)	24.6-30.0ppt 32-36.4ppt (S. Atl)		1-70m. Shallow coastal waters (bays and inlets) to continental shelf.	Crustaceans and fishes (primarily crabs)		Seasonal migration. Some overwintering.			
Citation	1-22,24,26,34	1,2,4-11,25-28,34,36	1,12,18,22,29	1,3,7,22		1,5,11-13,24	1,14,19-22,23		1,2,11,13,15,16			
Spawning Adults	<u>N. Gulf:</u> Apr-Sept (Ches. Bay region): Summer <u>N. and S. Carolina:</u> Spring-Summer. Females highly fecund. Batch spawners.	N. Gulf: Nearshore/overshelf. Near ocean inlets/offshore (S. Atl)	23.0-28.0°C	24.6-30.0 + ppt		Continental shelf-coastal waters			N. Gulf (LA, MS, AL, NW FL): Nearshore and shelf S. Atl: inlets, overshelf	N. Gulf: Males: mature at 2yrs longevity: 9-14 yrs. Females: Mature at 2-3 yrs. Longevity: 10-13 yrs. Both: Rapid growth for 1st 2yrs		
Citation	1,10,16-18,26-28,35	1,10,16-18,26,27,35	1,18	1,18		26,28,35			1,10,16-18,26-28,35	1,10,11,27,28,35		

Citations 9, 25-37 are U.S. East Coast information sources.

## **Cobia References** (Gulf of Mexico)

1. Shaffer, R.V., and E.L. Nakamura. 1989. Synopsis of biological data on the cobia *Rachycentron canadum* (Pisces: Rachycentridae). FAO Fisheries Synop. 153 (NMFS/S 153). U.S. Dep. Commer., NOAA Tech. Rep. NMFS 82, 21 p.
2. Ditty, J.G., and R.F. Shaw. 1992. Larval development, distribution, and ecology of cobia *Rachycentron canadum* (Family: Rachycentridae), in the northern Gulf of Mexico. Fish. Bull., U.S. 90:668-677.
3. Finucane, J.H., L.A. Collins, and L.E. Barger. 1978. Ichthyoplankton/mackerel eggs and larvae. Environmental studies of the south Texas outer continental shelf, 1977. Final rep. To Bur. Land Manage. By Natl. Mar. Fish. Serv., NOAA, Galveston, TX 77550, var. pagination.
4. Dawson, C.E. 1971. Occurrence and description of prejuvenile and early juvenile Gulf of Mexico cobia *Rachycentron canadum*. Cobia 1971:65-71.
5. Benson, N.G. 1982. Life history requirements of selected finfish and shellfish in Mississippi Sound and adjacent areas. U.S. Fish and Wildlife Service, Office of Biological Services, Washington, D.C. FWS/OBS-81/51. 97pp.
6. Hoese, H.D., and R.H. Moore. 1977. Fishes of the Gulf of Mexico; Texas, Louisiana, and adjacent waters. Texas A&M Univ. Press, College Station, TX, 327p.
7. Parker, J.C. 1965. An annotated checklist of fishes of the Galveston Bay system, Texas. Publ. Inst. Mar. Sci. Univ. Tex. 10:201-220.
8. Swingle, H.A. 1971. Biology of Alabama estuarine areas - Cooperative Gulf of Mexico Estuarine Inventory. Ala. Mar. Resour. Bull. 5, 123 p.
9. Hardy, J.D., Jr. 1978. Development of fishes of the Mid-Atlantic Bight: An atlas of egg, larval and juvenile stages. Vol. III. Aphredoderidae through Rachycentridae. U.S. Fish Wildl. Serv., Biol. Serv. Prog., FWS/OBS 78/12, 394 p.
10. Thompson, B.A., C.A. Wilson, J.H. Render, and M. Beasley. 1991. Age, growth and reproductive biology of greater amberjack and cobia from Louisiana waters. Final Rep. To U.S. Dep. Commer., NOAA, NMFS. Coop. Agreement NA90AA-H-MF089, Marine Fisheries Initiative (MARFIN) Prog., Coastal Fish. Inst., Louisiana St. Univ., Baton Rouge, LA., 55p.
11. Franks, J.S. and T.M. McBee. 1991. Age and growth. In J.S. Franks, T.D. McIlwain, R. M. Overstreet, J.T. McBee, J.M. Lotz, and G. Meyer. Investigations of the cobia (*Rachycentron canadum*) in Mississippi marine waters and adjacent Gulf waters. Gulf Coast Res. Lab., Ocean Springs, MS 39566-7000. Final Rep. to Miss. Dept. Wildl., Fish. and Parks/Bur. Mar. Res. (Dept. Mar. Res.), 152 Gateway Drive, Biloxi, MS 39531 and U.S. Fish Wildl. Serv., Atlanta, GA 30345, Proj. No. F-91, p. 1-1 to 1-60.
12. Springer, S., and H.R. Bullis, Jr. 1956. Collections by the *Oregon* in the Gulf of Mexico. U.S. Dep. Inter. Bur. Commer. Fish., Spec. Sci. Rep. Fish. 196, 134p.
13. Franks, J.S., N.M. Garber, and J.R. Warren. 1996. Stomach contents of juvenile cobia, *Rachycentron canadum*, from the northern Gulf of Mexico. Fish. Bull., U.S. 94:374-380.

14. Boschung, H.T., Jr. 1957. The fishes of Mobile Bay and the Gulf coast of Alabama. Ph.D. diss., Univ. of Alabama, Tuscaloosa, AL, 633 p.
15. Franks, J.S., M.H. Zuber, and T.D. McIlwain. 1991. Trends in seasonal movements of cobia, *Rachycentron canadum*, tagged and released in the northern Gulf of Mexico. J. Miss. Acad. Sci. 36 (1):55.
16. Biesiot, P.M., R.M. Caylor, and J.S. Franks. 1994. Biochemical and histological changes during ovarian development of cobia, *Rachycentron canadum*, from the northern Gulf of Mexico. Fish. Bull. 92:686-696.
17. Lotz, J.M., R.M. Overstreet, and J.S. Franks. 1996. Gonadal maturation of the cobia, *Rachycentron canadum*, from the northern Gulf of Mexico. Gulf Res. Rep. 9(3):147-159.
18. Caylor, R.E., P.M. Biesiot and J.S. Franks. 1994. Culture of cobia (*Rachycentron canadum*): cryopreservation of sperm and induced spawning. Aquaculture. 125:81-92.
19. Meyer, G.H., and J.S. Franks. 1996. Food of cobia, *Rachycentron canadum*, from the northcentral Gulf of Mexico. Gulf Res. Rep. 9(3):161-167.
20. Knapp, F.T. 1951. Food habits of the sergeantfish, *Rachycentron canadum*. Copeia 1951:101-102.
21. Miles, D.W. 1949. A study of the food habits of the fishes of the Aransas Bay area. M.S. thesis, Univ. Houston, Houston, TX, 70p.
22. Reid, G.K., Jr. 1954. An ecological study of the Gulf of Mexico fishes, in the vicinity of Cedar Key, Florida. Bull. Mar. Sci. Gulf Caribb. 4:1-94.
23. Springer, V.G., and K.D. Woodburn. 1960. An ecological study of the fishes of the Tampa Bay area. Prof. Pap. Ser. 1, Fla. Board Conserv. Mar. Res. Lab., 104p.
24. Christmas, J.Y., and R.S. Waller. 1974. Investigations of coastal pelagic fishes. Completion rep., proj. 2-128-R, Gulf Coast Res. Lab., Ocean Springs, MS 39564.
25. Ryder, J.. 1887. On development of osseous fishes, including marine and freshwater forms. U.S. Comm. Fish Fish., Rep. of the Commissioner for 1885, p. 489-604.
26. Joseph, E.B., J.J. Norcross, and W.H. Massmann. 1964. Spawning of the cobia, *Rachycentron canadum*, in the Chesapeake bay area, with observations of juvenile specimens. Chesapeake Sci. 5(1-2):67-71.
27. Richards, C.E. 1967. Age, growth and fecundity of the cobia, *Rachycentron canadum*, from Chesapeake bay and adjacent mid-Atlantic waters. Trans. Am. Fish. Soc. 96(3):343-350.
28. Hassler, W.W., and R.P. Rainville. 1975. Techniques for hatching and rearing cobia, *Rachycentron canadum*, through larval and juvenile stages. Publ. UNC-SG-75-30, Univ. N.C. Sea Grant Coll. Prog., Raleigh, NC 27650-8605, 26p.
30. Christensen, R.F. 1965. An ichthyological survey of Jupiter Inlet and Loxahatchee River, Florida. M.S. Thesis, Fla. State Univ., Tallahassee, FL. 32306, 318 p.

31. Wilk, S.J., and M.J. Silverman. 1976. Fish and hydrographic collections made by the research vessels *Dolphin* and *Delaware II* during 1968-72 from New York to Florida. NOAA Tech. Rep. NMFS SSRF-697, NOAA, NMFS, Seattle, WA 98115-0070, 159 p.
32. Milstein, C.B., and D.L Thomas. 1976. Fishes new or uncommon to the New Jersey coast. Chesapeake Sci. 17(3):198-204.
33. Linton, E. 1905. Parasites of fishes of Beaufort, North Carolina. Bull. U. S. Bur. Fish. (1904) 24:321-428.
34. Richards, C.E. 1977. Cobia, *Rachycentron canadum*, tagging within Chesapeake bay and updating of growth equations. Chesapeake Sci. 18(3):310-311.
35. Smith, J.W. 1995. Life history of cobia, *Rachycentron canadum*, (Osteichthyes: Rachycentridae), in North Carolina waters. Brimleyana 23:1-23.
36. Smith, H.M. 1907. The fishes of North Carolina. N.C. Econ. Geol. Surv. 2, 453 p.
37. Rose, C.D. 1965. The biology and catch distribution of the dolphin, *Coryphaena hippurus* (Linnaeus), in North Carolina waters. Ph.D. diss., N.C. State Univ., Raleigh, NC 27695, 153 p.