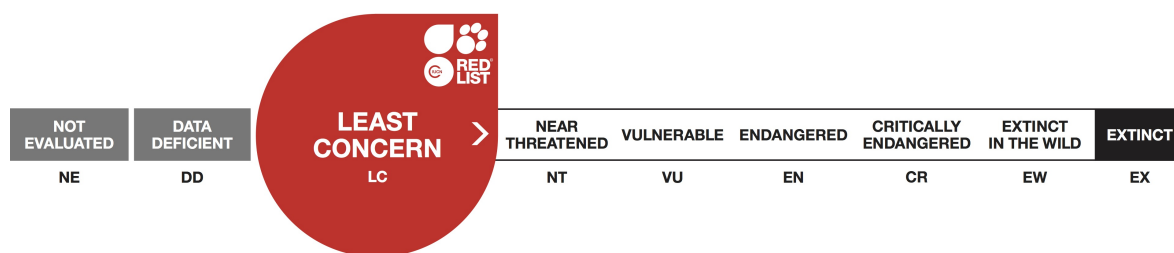


## *Centropomus undecimalis*, Common Snook

**Assessment by:** Mendonça, J.T., Chao, L., Albieri, R.J., Giarrizzo, T., da Silva, F.M.S., Castro, M.G., Brick Peres, M., Villwock de Miranda, L. & Vieira, J.P.



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## Taxonomy

Kingdom	Phylum	Class	Order	Family
Animalia	Chordata	Actinopterygii	Perciformes	Centropomidae

**Taxon Name:** *Centropomus undecimalis* (Bloch, 1792)

### Synonym(s):

- *Centropomus appendiculatus* Poey, 1860
- *Centropomus argenteus* Regan, 1904
- *Centropomus undecimradiatus* Lacepède, 1802
- *Sciaena undecimalis* Bloch, 1792
- *Sphyraena aureoviridis* Lacepède, 1803

### Regional Assessments:

- Gulf of Mexico

### Common Name(s):

- English: Common Snook

## Assessment Information

**Red List Category & Criteria:** Least Concern [ver 3.1](#)

**Year Published:** 2019

**Date Assessed:** February 8, 2019

### Justification:

This widely distributed species has a centre of abundance around Florida in U.S. waters, with populations expanding northward in the Gulf of Mexico. It prefers mangrove-fringed estuarine habitats. It is highly valued in recreational and commercial fisheries. Fishery statistics are inconsistently collected and generally mixed with other *Centropomus* species. Catch and effort has been increasing in the recreational fishery off Florida since 1997. The spawning stock biomass has been decreasing on the Atlantic coast of Florida since the mid-1990s and has been generally increasing on the Gulf coast. A 2006 stock assessment evaluated its Florida populations as overfished and a 2013 assessment reported there was no particular concern. The Mexican fishery was evaluated as occurring at maximum sustainable yield. Over the past nine years, catch and effort have been increasing in some areas off Brazil and there is concern that juveniles are being taken at an unsustainable level. In addition, coastline development and degradation of inshore habitats may impact local populations. There are some management efforts in place. At present, there is no evidence for significant declines throughout its global range, however, increasing effort is concerning. Therefore, it is listed as Least Concern with recommendation to improve management of fisheries.

### Previously Published Red List Assessments

2015 – Least Concern (LC)

<http://dx.doi.org/10.2305/IUCN.UK.2015-2.RLTS.T191835A2007225.en>

## Geographic Range

### Range Description:

This species is distributed in the western Atlantic from northeastern Florida south along the U.S., Bermuda, in the Gulf of Mexico from the Florida Keys north to the Suwanee River (Florida) and from Matagorda Bay, Texas down along the Mexican coast to northwestern Cuba, throughout the Caribbean Sea except the Cayman Islands, and along South America to Santa Catarina State, Brazil (Bloch 1792, Robins and Ray 1986, R. Robertson pers. comm. 2014). Records from elsewhere in the northern Gulf of Mexico and from North Carolina are considered waifs.

### Country Occurrence:

**Native:** Anguilla; Antigua and Barbuda; Aruba; Barbados; Belize; Bermuda; Bonaire, Sint Eustatius and Saba (Saba, Sint Eustatius); Brazil; Colombia; Costa Rica; Cuba; Curaçao; Dominica; Dominican Republic; French Guiana; Grenada; Guadeloupe; Guatemala; Guyana; Haiti; Honduras; Jamaica; Martinique; Mexico; Montserrat; Nicaragua; Panama; Puerto Rico; Saint Barthélemy; Saint Kitts and Nevis; Saint Lucia; Saint Martin (French part); Saint Vincent and the Grenadines; Sint Maarten (Dutch part); Suriname; Trinidad and Tobago; Turks and Caicos Islands; United States; Venezuela, Bolivarian Republic of; Virgin Islands, British; Virgin Islands, U.S.

### FAO Marine Fishing Areas:

**Native:** Atlantic - western central, Atlantic - southwest

## Population

The abundance of *C. undecimalis* centres around Florida in mangrove fringed coastal waters (Gilmore 1986). Snook are expanding northward along the U.S. Texas and Florida Gulf coasts, as mangroves increase due to increased warming in the winter (J. Tolan and H. Jelks pers. comm. 2014).

- **Florida:** Differences among the genetic diversity and genotype frequencies of common snook from the gulf coast of Florida, the Atlantic coast of Florida, and the islands of the Caribbean are evidence of reproductive isolation among these subpopulations (Tringali and Bert 1996). In Florida, snook from the Atlantic and Gulf coasts are sufficiently isolated and have sufficiently different life histories so that each group is managed as a separate stock. It is commonly taken in recreational fisheries, particularly on Florida's Atlantic and gulf coasts. In the U.S. it was previously a commercial fish, however, in 1957 it was declared a gamefish only. Recreational landings in recent years exceed the earlier commercial landings (Muller and Taylor 2006). It is taken in large quantities as a game fish in Florida waters and effort is increasing. The median total harvest estimates from the most recent stock assessment show that, in 2004, snook mortality from catch and release fishing was 35% of the estimated total statewide harvest. On the Atlantic coast of Florida, total catch rates have increased since 1997 and the median standardized total catch rate in 2004 was the highest of the past fourteen years, with a similar trend observed for the Florida gulf coast. Catch data from fishery-independent seine hauls show that the number of snook per set have increased in 2003 and 2004 on the Atlantic coast of Florida after decreasing over the 1999-2002 period. On the Gulf coast, the 2003 value was the highest followed by a return in 2004 to lower catches seen in the late 1990s. The most recent stock assessment indicates that the spawning biomass of snook has been decreasing on the Atlantic coast of Florida since the mid-1990s, and has been generally increasing on the Gulf coast. On the Florida Atlantic coast, 62% of fish caught were undersized (less than 26 inches) and 11% were oversized (greater than 34 inches). On the Gulf coast, 80% were undersized and 2% were oversized. The Commission's management objective for common snook is to maintain the spawning potential ratio (SPR) at or above 40%. From the most recent stock assessment, this management objective has not been achieved and snook is considered overfished on both coasts of Florida (Muller and Taylor 2006). The 2013 Florida Fish and Wildlife stock assessment indicates no particular concern for the species. The only declines of note were due to cold weather events and red tide. In a study conducted between 2007-2010 in Charlotte Harbour (southwest Florida), 3,304 individuals (754 in 2007, 1043 in 2008, 833 in 2009, and 674 in 2010) of this species were captured (Adams *et al.* 2011). Recreational fishing from the Everglades National Park is estimated at 50,000 trips per year, 40% of which target *C. undecimalis*, which is more than any other individual species (Osborne *et al.* 2006, Ault 2008). In an electrofishing/hook and line study conducted between 1992-2001 in the Shark River (southwestern region of the Everglades National Park), 3,142 individuals of this species were captured (Boucek and Rehage 2013). Ley and Allen (2013) calculated the maximum yield of *C. undecimalis* to be 416 metric tonnes and obtained at a fishing mortality rate ( $F_{msy}$ ) of 0.33. The spawning potential ratio (SPR) was 29% at maximum yield (MSY) on the west coast of Florida. For the east coast, maximum yield was 374 mt, obtained at  $F_{msy}$  of 0.46 and SPR was 24% at MSY.

- **Mexico:** Off Mexico, total catch increased between 1985-1997 (SAGARPA 2001). In the Mexican fishery, the mortality rate for *C. undecimalis* is 1.21 and exploitation rate is 0.76 in Campeche, 1.38 and 0.74 in Alvarado (Veracruz), and 1.3 and 0.84 in northern Veracruz and southern Tamaulipas. The main spawning season is between May to August. The fishery is currently considered to be at a level of maximum sustainability and fishing effort should not be increased (SAGARPA 2012).

- **Brazil:** This species is caught in artisanal fisheries along most of the Brazilian coast, including the

Amazon estuary (Oliveira *et al.* 2007), Alagoas State (Rangely *et al.* 2010), Rio de Janeiro State (Carvalho 2006), and Sao Paulo State (Mendonça and Katsuragawa 2001, Fagundes *et al.* 2007, Santos 2007). In the estuarine areas of Paraná State, it is largely targeted by recreational fishers. Fishers travel from as far away as 200 km to target snooks, which creates supplements the local economy (Chaves pers. comm. 2011). Peak catch off Cananea occurs between February-April and November-December. Combined landings for *C. parallelus* and *C. undecimalis* are not significant in terms of weight or number of individuals. However, it is highly desired by fishermen due to its market price, which can be ten times higher than the price of mullet, another locally caught species. Catch has increased off Para: 871.69 t in 1998, 1825.24 t in 2000, 1660.82 t in 2001, 1392.57 t in 2002 and 1647.81 t in 2003 (average annual catch 1473.88 t) (Furtado-Junior *et al.* 2006). Total landings in São Paulo, for all snook species, was 24,120 kg in 2001 and 10,746 kg in 2002 (Ávila-da-Silva and Carneiro 2003a and 2003b). Off Sao Paulo, it is caught with gill nets and fish weirs between November to January with a mean catch of 9 t. Over the past nine years, CPUE increased by 30% in the gill net artisanal fisheries and immature individuals comprised 90% of the total catch. Carvalho (2006) estimated natural mortality coefficient as 0.259 year<sup>-1</sup>. There is evidence that the minimum mesh size is not sufficiently large enough to allow immature individuals to avoid capture (Pessler 2007).

**Current Population Trend:** Unknown

## Habitat and Ecology (see Appendix for additional information)

This euryhaline species occurs in coastal waters with a preference for mangrove-fringed estuarine habitats (Gines and Cervigón 1967, Bussing 1998, Riede 2004). Its wide salinity tolerance allows it to occupy a variety of habitats from freshwater to marine. Juveniles utilize three distinct habitat areas in their first year: freshwater tributaries, salt marshes and then seagrass beds. It is most commonly found in waters of temperatures between 25 to 31 degrees Celsius; the lower lethal limit of water temperature for juveniles is 9-14 degrees Celsius (48.2-57.2 degrees F) and 6-12 degrees Celsius (42.8-53.6 degrees F) for adults (Hill 2005, Press 2010). Juveniles are known to survive dissolved oxygen levels of 0.4 ppm, but this tolerance is weight dependent. Larger individuals compensate for lower ventilation rates by being more effective at migration to more tolerable conditions (Hill 2005). Smaller individuals are captured during the rainy season and larger individuals during the dry season in Salina Lagoon (Para State). Recruitment in the lagoon is thought to occur in May, September and January (Pereira 2008). After maturation, the distribution closely approximates the distribution of mangroves (Marshall 1958, Gilmore *et al.* 1983), but also occur along beaches, river mouths, nearshore reefs, salt marshes, seagrass meadows and lakes. Adults are sensitive to cold stun events. It is an opportunistic carnivore that feeds primarily on other pelagic fishes. It is a pelagic feeder with two feeding peaks per day. The first peak occurs approximately two hours before sunrise, followed by a peak approximately two to three hours following sunset. Increases in feeding activity have been documented with an increase in water flow following standing flood or ebb tides (Hill 2005).

**Life History:** Its maximum size is 140 cm FL and weight to 22 kg. Females are generally larger than males of the same age. It is a protandric hermaphrodite. The male:female sex ratio(s) for this species have been found to be ~1.9:1 at <553 mm standard length, at 553 mm the ratio is ~1:1, and at 750 mm the ratio is ~1: 1.2 (Muller and Taylor 2006). Males reach sexual maturity by the time they reach one year at 15.0-20.0 cm (5.9-7.9 inches) FL, and female gonads mature directly from the mature male gonads shortly after spawning. Larvae grow as much as 1.0 mm per day and after reaching 2.4 mm SL, growth slows to approximately 0.15 mm per day. Maturation begins when juveniles reach approximately 30 cm (Hill 2005). Sexual maturity occurs between the ages of four and six and can reach a maximum longevity

of about 20 years (Stock Assessment 2005). The estimated generation length is  $= 5 + (20 - 5) / 2$  or 12.5 years. The natural mortality rate for the Florida Atlantic coast is estimated at 0.27 per year (Muller and Taylor 2006). It is a broadcast spawner, that reproduces twice per year, often peaking during times of increased rainfall (Hill 2005, Press 2010). It has been observed to congregate for spawning at the mouths of rivers, inlets and canals. Spawning occurs in the evening over the course of several days. In Florida, two spawning peaks are observed: the first in June/July, the second in August/October. Its main spawning season occurs between May to August where it spawns only in saline waters. Results from a study conducted in Tampa Bay, Florida supports findings that this species exhibits facultative catadromy and divergent migration tactics and habitat use as well as intra-seasonal and inter-annual spawning site fidelity (Lowerre-Barbieri *et al.* 2014). According to Carvalho (2006), hatching of common snook in Rio de Janeiro State, Brazil occurred in April to June. Couto and Guedes (1981) report reproductive activity from October to June in Pernambuco State, with peaks in January, June, October and November. In Espírito Santo State, spawning takes place from September to February (Vanacor and Aoki 1997). Mendonça (2004) found individuals from four to 21 years (on a length range from 24 to 107 cm) and a low growth rate ( $K = 0.0712$  cm/year). Carvalho (2006) found the following growth parameters in Rio de Janeiro to be:  $L = 101.1$  cm,  $W = 11.4$  kg,  $K = 0.112$  cm/year,  $t_0 = -2.59$  yr.,  $t_{max} = 29.3$  yr.

Coast-specific von Bertalanffy growth equations for fork length at age (Taylor *et al.* 2000) for Florida were:

Fork length (mm) =  $989.3 (1 - e^{-0.235(\text{Age} + 0.0976)})$  on the Atlantic coast and

Fork length (mm) =  $947.3 (1 - e^{-0.175(\text{Age} + 1.352)})$  on the Gulf coast.

**Systems:** Freshwater, Marine

## Use and Trade

This species supports an important recreational fishery in the Gulf of Mexico, where it is highly desired by sportsfishermen due to its fighting ability. In 1986, Florida's sport fisheries for snook, tarpon and other game fish were estimated to be worth \$5-7 billion annually. It is also important to artisanal and recreational fisheries along the Brazilian coast. It has a high commercial value due to its good tasting flesh (IGFA 1991, FAO 1992, Press 2010). It is also known to be used in aquaculture (Garibaldi 1996).

## Threats (see Appendix for additional information)

This species is a popular recreational fish that is highly targeted by catch-and-release fisheries. Taylor *et al.* (2001) estimated that 2% of recreationally caught and released snook are expected to die within 24 hours of capture. This rate was applied to the catch data to estimate an annual average of approximately 40,000 snook deaths from release mortality. This number represents about one-half the number of snook retained by anglers, making the total number of *C. undecimalis* deaths around 120,000 fish per year (Ley and Allen 2013). It occurs as bycatch in the white shrimp trawl fishery along the São Paulo coast (Santos 2007). Snook are late maturing and long-lived, and may therefore be easily overfished. It can be negatively affected by cold stun and red tide events (Muller and Taylor 2006, Fish and Wildlife Research Institute 2010). It may especially be threatened by habitat destruction via coastal development since this species usually inhabits near-shore habitats, and exhibits high levels of site fidelity in juvenile and adult specimens (Adams *et al.* 2011, Barbour and Adams 2012). Water management practices in

Florida Bay, Taylor Slough have also resulted in snook population declines since 1984. Such practices alter the hydrology and salinity of the environment, which are thought to reduce food availability (Lorenz 2013). Its populations have also been negatively affected by mosquito control efforts (impounding) throughout Florida. Research is currently underway to prevent further damage due to impounding and to restore wildlife populations in the affected areas (Rey *et al.* 2012).

## **Conservation Actions (see Appendix for additional information)**

Off Mexico, there are seasonal fishery closures for *C. poeyi* and *C. undecimalis* from May 15 to June 30 from the border of Soto la Marina, Tamaulipas to the border of Chachalacas, Veracruz, and from July 1 to August 15 from the border of Chachalacas, Veracruz to the border of Tonalá. There are no snook fishery regulations for the states of Tabasco and Campeche. Since this species is highly vulnerable to fishing mortality in the spawning season it is recommended to maintain exploitation levels in the average catch of the past ten years. Annual average catch recommendations not to exceed: Tabasco 2,300 t, Campeche 2,100 t, Veracruz 1,500 t, Quintana Roo 127 t, Tamaulipas and Yucatán 100 t. It is further recommended to establish a minimum catch size, require disclosure of official catch by species for *C. undecimalis*, *C. poeyi* and *C. parallelus*, design recovery strategies through analysis and assessments in each annual fishing season, and implement specific management plans (SAGARPA 2012).

The Florida Legislature made common snook a gamefish in 1957 (no longer sold commercially). In July 1985, a minimum size of 24 inches was established, and a maximum size of 34 inches, with an allowance for one fish over 34 inches, a closed season of January, February, June, July and August 1985 and 1986; a bag limit of two fish; and restricted gear to hook-and-line only. In July 1987, management was extended to all fish of the genus *Centropomus*, August was permanently added to the summer closed season; and all fish were required to be landed in whole condition. In March 1994, the January closure was changed to December 15 to January 15. In December 1998, a slot limit of 26 to 34 inches with no allowance for fish larger than 34 inches was implemented. Recent regulations include a prohibition on spearing (July 2000); and reducing the bag limit to one fish on the Gulf coast and Monroe county, adding May to the closed months on the Gulf coast and prohibiting landing snook in the Gulf that were harvested north and east of the Dade-Monroe county line (January 2002) (Muller and Taylor 2006). The Florida Fish and Wildlife Conservation Commission (FWC) manages the snook fishery throughout the state of Florida. The aim of the FWC is to maintain the status of the snook stock to a spawning potential ratio (SPR) of 40% or more. The FWC has also applied bag limits, seasonal closures, and harvest slot limits in order to control fishing mortality and conserve the snook population (Ley and Allen 2013). Both catch and effort are increasing, therefore monitoring of populations is recommended. Snook were occasionally caught as by-catch in the inshore gillnet fishery, however, the constitutional net ban implemented in July 1995 eliminated the use of entangling nets from inshore waters and from all likely snook habitats (Muller and Taylor 2006).

There are specific regulations for all species of snook in Texas (minimum size of 24", maximum size of 28", and a daily bag limit of one fish per day).

In Brazil, ordinance from IBAMA 49-N, from 13/05/1992 establishes a closed for fishery period from 15/May to 31/July in Espírito Santo and Bahia States. Ordinance n°53/05 from IBAMA, establishes a minimum size of capture of 50 cm in south and southeastern Brazilian coast.

## Credits

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## External Resources

For [Images and External Links to Additional Information](#), please see the [Red List website](#).

## Appendix

### Habitats

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Habitat	Season	Suitability	Major Importance?
9. Marine Neritic -> 9.9. Marine Neritic - Seagrass (Submerged)	Resident	Suitable	-
9. Marine Neritic -> 9.10. Marine Neritic - Estuaries	Resident	Suitable	-
12. Marine Intertidal -> 12.7. Marine Intertidal - Mangrove Submerged Roots	Resident	Suitable	-

### Threats

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Threat	Timing	Scope	Severity	Impact Score
1. Residential & commercial development -> 1.1. Housing & urban areas	Ongoing	-	-	-
1. Residential & commercial development -> 1.2. Commercial & industrial areas	Ongoing	-	-	-
1. Residential & commercial development -> 1.3. Tourism & recreation areas	Ongoing	-	-	-
5. Biological resource use -> 5.4. Fishing & harvesting aquatic resources -> 5.4.1. Intentional use: (subsistence/small scale) [harvest]	Ongoing	Unknown	Unknown	Unknown
	Stresses:	2. Species Stresses -> 2.1. Species mortality		
5. Biological resource use -> 5.4. Fishing & harvesting aquatic resources -> 5.4.3. Unintentional effects: (subsistence/small scale) [harvest]	Ongoing	-	-	-
5. Biological resource use -> 5.4. Fishing & harvesting aquatic resources -> 5.4.4. Unintentional effects: (large scale) [harvest]	Ongoing	-	-	-
7. Natural system modifications -> 7.3. Other ecosystem modifications	Ongoing	-	-	-
9. Pollution -> 9.1. Domestic & urban waste water -> 9.1.3. Type Unknown/Unrecorded	Ongoing	Unknown	Unknown	Unknown
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation		

### Conservation Actions in Place

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

<b>Conservation Actions in Place</b>
In-Place Land/Water Protection and Management
Conservation sites identified: No
Occur in at least one PA: Yes
In-Place Species Management
Harvest management plan: Yes

## Additional Data Fields

<b>Distribution</b>
Lower depth limit (m): 25
Upper depth limit (m): 0

## The IUCN Red List Partnership



The IUCN Red List of Threatened Species™ is produced and managed by the [IUCN Global Species Programme](#), the [IUCN Species Survival Commission \(SSC\)](#) and [The IUCN Red List Partnership](#).

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