

Species of Concern

Proactive Conservation Program

Q: What is a “Species of Concern”?

A: A “Species of Concern” is a species or vertebrate population for which there is concern or great uncertainty about its status. Species of Concern are not listed under the Endangered Species Act (ESA) and are not protected by the ESA. NOAA Fisheries Service believes it is important to highlight species that could benefit from proactive conservation efforts. NOAA Fisheries Service funds grants to states and management agencies, as well as using internal funding to our science centers and regions, to support projects to conserve Species of Concern.

Q: What are the goals of the “Species of Concern” Program?

A: The goals of the “Species of Concern” Program are to:

- increase public awareness about these species;
- identify those species potentially at risk and in need of protective measures before listing under the ESA becomes necessary;
- identify data deficiencies and uncertainties associated with the status of the species;
- work cooperatively with regional co-managers and interest groups to obtain the information necessary to evaluate species status and threats;
- identify conservation opportunities; and,
- work proactively with Federal and state agencies, Native American tribes, and the public to conserve the species.

Q: What are the criteria for identifying and designating “Species of Concern”?

A: Demographic and diversity vulnerabilities, including:

Abundance and productivity:

- Magnitude of decline – combination of recent rate of decline and historical extent of decline
- Natural rarity – species known only from a small number of specimens or that occurs infrequently and in small numbers due to ecological or evolutionary factors
- Endemism – species or population that is native to a particular place and is only found there

Distribution:

- Population connectivity – level of reproductive exchange among related populations
- Limited geographic range – found in a limited area
- Endemism – species or population that is native to a particular place and is only found there

Life-history characteristics:

- Vulnerable life-history strategies – e.g., low fecundity, late age at maturity, slow growth rates
- Resilience to environmental variability and catastrophes
- Loss of unique life-history traits

Threats:

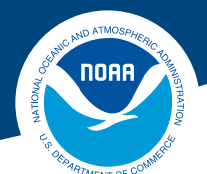
- Extraction and harvest – permanently removes the species from its habitat
- Habitat degradation and loss – destruction, modification, or loss of a species’ habitat that could result in a lower carrying capacity
- Disease and predation – can influence the abundance and productivity of a species or population
- Other natural or man-made factors for decline – include, but are not limited to, ocean conditions and poor hatchery practices



**NOAA
FISHERIES
SERVICE**

Science, Service, Stewardship

October 2009





Q: Why are most former candidate species now “Species of Concern”?

A: Under the ESA, a candidate species is one that is being considered for listing as an endangered or threatened species. Most former candidate species had uncertain biological status and threats, but were not actively being considered for listing under the ESA. In fact, some former candidate species had undergone an ESA biological status review determining that listing was “not warranted”, but significant concerns or uncertainties remained regarding their extinction risk and/or threats.

To better reflect the purposes of the list that NOAA Fisheries Service maintains, these species are now considered “Species of Concern.” Only those species that are being actively considered for ESA listing are now called “Candidate Species.” NOAA Fisheries Service definition of Candidate Species is now a species for which NOAA Fisheries Service has initiated a status review as a result of a petition and a positive ninety-day finding. Neither status carries any procedural or substantive protections under the ESA.

For More Information:

Please see our regional webpage: www.fpir.noaa.gov/PRD/prd_species_of_concern.html
Or visit our national webpage: www.nmfs.noaa.gov/pr/species/concern/

NOAA Fisheries Service (also known as National Marine Fisheries Service)
Pacific Islands Regional Office
1601 Kapiolani Blvd., Suite 1110
Honolulu, HI 96814
Protected Resources Division; Krista Graham, (808) 944-2238 Krista.Graham@noaa.gov

NOAA Fisheries Service (also known as National Marine Fisheries Service)
Pacific Islands Fisheries Science Center
1601 Kapiolani Blvd., Suite 1110
Honolulu, HI 96814
Protected Species Division; John Henderson, (808) 944-2173 John.R.Henderson@noaa.gov

SOC Facts:

Program start date: 2004

Number of “Species of Concern”: 39

Number of “Species of Concern” in Pacific Islands Region: 4

Humphead wrasse (*Cheilinus undulatus*)

Bumphead parrotfish (*Bolbometopon muricatum*)

Hawaiian reef coral (*Montipora dilatata*)

Inarticulated brachiopod (*Lingula reevii*)

Common Name: Humphead Wrasse

Species: *Cheilinus undulatus* (Ruppell, 1835)

Area of Concern: Its range falls within the jurisdiction of 48 countries and overseas territories, including the U.S. territories of Guam, American Samoa, Commonwealth of the Northern Mariana Islands, Howland Island, Baker Island, Jarvis Island, and Palmyra Atoll.

Species Description: Humphead wrasses are slow growing and long-lived, with delayed reproduction and low replenishment rates. This species can live at least 30 years and becomes sexually mature at 5-7 years. Its generation time is expected to be in excess of 10 years and the rate of intrinsic population increase is likely to be low. The species is hermaphroditic (with female-to-male sex change) which may make it more vulnerable to overfishing than species that do not change sex. This species recruits episodically and actively selects branching hard and soft corals and sea grasses at settlement.

Rationale for “Species of Concern” Listing:

Demographic and Diversity Concerns

C. undulatus is extremely patchily distributed with adults confined to steep outer reef slopes, channel slopes, and lagoon reefs in water 1-100 meters deep. Adults appear to be sedentary over a given patch of reef according to multiple accounts by divers or dive operations that return repeatedly to the same spots and report seeing the same individuals. Adults, however, move periodically to local spawning aggregation sites where they concentrate to spawn at certain times of the year. Juveniles tend to prefer a more cryptic existence in areas of dense branching corals, while larger individuals and adults prefer to occupy limited home ranges in more open habitat on the edges of reefs, channels, and reef passes (Donaldson and Sadovy, 2001). Overall, humphead wrasse density is strongly correlated with the percentage of hard bottom or coral cover, while fish size is inversely proportional to coral cover (i.e., the smallest fishes were abundant in areas with high live coral) (Sadovy *et al.*, unpublished manuscript). The species is most often observed in solitary male-female pairs, or groups of two to seven individuals (Donaldson, 1995; Donaldson and Sadovy, 2001).

It is believed to be uncommon to rare wherever it occurs, and natural densities are evidently never high even in preferred habitats. Survey results throughout the species’ range in preferred habitats have shown adult densities of *C. undulatus* in unfished or lightly fished areas at 1 to 10 animals per 5,000 square meters of reef (Donaldson and Sadovy, 2001; O’Connell in lit.; Sadovy *et al.*, unpublished manuscript). Once an economically important species in Guam, it is now rarely seen on reefs, and infrequently reported on inshore survey catch results. In Wake Atoll (U.S.), the humphead wrasse is completely protected by regulation of the U.S. Department of Defense. In this unfished habitat, there are reports of several hundred adults along a 5-kilometer section of reef. Juveniles-adults are rare at Swains Island and Rose Atoll, and uncommon at Tutuila, American Samoa, based on diver-observations made on a February–March 2002 NMFS research cruise. The species has been rare on analogous surveys made during 2000, 2001, and 2002 at Howland and Baker Islands in the Phoenix Island chain and at Jarvis Island, and Palmyra and Kingman atolls in the Line Islands.

Factors for Decline

Threats include: 1) intensive and species-specific removal in the live reef food fish trade; 2) spearfishing at night with SCUBA gear; 3) lack of coordinated, consistent national and regional management; 4) illegal, unregulated, or unreported (IUU) fisheries; and 5) loss of habitat.



**NOAA
FISHERIES
SERVICE**

Science, Service, Stewardship

Common Name: Bumphead Parrotfish

Species: *Bolbometopon muricatum* (Valenciennes in Cuvier and Valenciennes, 1840)

Area of Concern: In the U.S. it occurs in Guam, American Samoa, Commonwealth of the Northern Mariana Islands, and the Pacific Remote Island Areas (PRIAs). It occurs in coral reef habitats from 1-30 meters (m) depth. Juveniles are found in lagoons while adults prefer clear outer lagoon and seaward reefs. The species is usually found in small groups.

Species Description: Bumphead parrotfish are the largest of all the parrotfishes, growing to 1.3 m in length. The species is slow growing and long-lived, with delayed reproduction and low replenishment rates. These species appear to recruit at low levels throughout the year but are not very selective about which habitats they settle into. The species has a low, minimum population doubling time of 4.5 - 14 years.

The species is herbivorous but it also grazes substantial amounts of live coral, contributing significantly to the bioerosion of reefs.

Rationale for “Species of Concern” Listing:

Demographic and Diversity Concerns

These fish have very wide ranges but population abundances have been declining throughout their range due to overfishing. The species has nearly disappeared from Guam’s reefs, and have declined in American Samoa. No bumphead parrotfish were encountered during intensive *in situ* diver surveys made at Swains Island and Rose Atoll, and at the main islands of Ofu, Olosega, Tau, and Tutuila in American Samoa, on a NMFS research cruise in Feb-Mar 2002. During 3-years of analogous surveys at Howland and Baker Islands in the Phoenix Island chain and at Jarvis Island and Palmyra and Kingman atolls in the Line Islands, bumphead parrotfish were encountered only at Palmyra, where large adults were rare. They have been classified as vulnerable on the IUCN Red List due to large declines in abundance and localized extinctions in many areas..

Factors for Decline

The main threats are: 1) overfishing and destructive fishing techniques; 2) degradation and loss of coral reef habitats; and 3) a vulnerable life history.



**NOAA
FISHERIES
SERVICE**

Science, Service, Stewardship

Common Name: Hawaiian Reef Coral

Species: *Montipora dilatata* (Studer, 1901)

Area of Concern: *Montipora dilatata* is a rare coral that has been reported only from the Hawaiian archipelago, in Kaneohe Bay (Oahu), and in the Northwestern Hawaiian Islands at Midway atoll, Pearl and Hermes atoll, Lisianski Island, Laysan Island, Maro Reef, and French Frigate Shoals.

Species Description: The coral builds horizontally expanding thin sheets that are often leaflike, 1.5 cm thick. This species requires calm water.

Rationale for “Species of Concern” Listing:

Demographic and Diversity Concerns

The species has been found to be uncommon in extensive surveys in the Northwestern Hawaiian Islands. In Kaneohe Bay, where it formerly was abundant, extensive surveys during 2000 identified only three colonies. In 2007, coral experts again only positively identified three *M. dilatata* colonies in Kaneohe Bay, and were unsuccessful in clearly identifying it from other species within the same genus, particularly *M. incrassata*. In 2008, field surveys identified 20 *M. dilatata* colonies in Kaneohe Bay, although not the same colonies originally identified in 2000, which have not been relocated.

Factors for Decline

The main threats include: 1) habitat degradation and modification as a result of sedimentation, pollution, and alien species (*Kappaphycus* spp.) and invasive green alga (*Dictyosphaeria cavernosa*); 2) a limited distribution; 3) damage by anchors, fish pots, swimmers, and divers; 4) coral bleaching; and 5) possible reproductive isolation (Allee effect).



**NOAA
FISHERIES
SERVICE**

Science, Service, Stewardship

Common Name: Inarticulated Brachiopod

Species: *Lingula reevii* (Davidson, 1880)

Area of Concern: There are 12 species currently found throughout the world, seven being endemic, occurring in Japan, Northern Australia, the Philippines (Worcester, 1969) and the Hawaiian Islands. *Lingula reevii* is the only species found in the U.S., occurring only in Kaneohe Bay (Oahu), Hawaii. It has also been reported from Indonesia, but the status of this record needs further investigation.

Species Description: Brachiopods (lamp shells) are common marine fossils that contain about 352 extant species. *Lingula* represents one of the oldest extant genera on Earth. It was once widely distributed, but today exists only in a small area of the Pacific. Members of this genus are found mostly in shallow marine or brackish waters from the intertidal zone to about 20 meters (66 ft). The phylum is included as one of three lophophorate phyla because of its feeding structure, called a lophophore; however, it also resembles a bivalve mollusk in possessing a mantle and a calcareous shell with two valves. *Lingula* is an inarticulated brachiopod (its shell is held together only by muscles and not teeth) that lives within a burrow and feeds on plankton. The lophophore consists of a fold of the body wall that possesses a crown of ciliated tentacles surrounding the mouth. The lateral cilia create a water current and fine plankton are transported down the tentacles to the brachial groove and into the mouth.

Lingula is dioecious, and gametes are shed into the water column for external fertilization. Embryos develop into free-swimming larvae that look like a tiny adult; they develop a shell while planktonic. As additional shell material is laid down, the animal becomes heavy, sinks to the bottom, and takes up its adult existence. There is no metamorphosis in *Lingula*.

Rationale for “Species of Concern” Listing:

Demographic and Diversity Concerns

The species is rare and is only known to occur in one location in Hawaii (Kaneohe Bay, Oahu). Past surveys of Kaneohe Bay populations suggested a distinct decrease in abundance following the diversion of sewage effluent from the Bay in 1978/1979. Surveys in 2004 reported a dramatic decline from historical densities, from maximum estimates of 500 individuals/m² and 100 individuals/m², to a maximum density of only 4 *Lingula*/m² observed in 2004. Additional extensive surveys conducted in 2007 and 2008 have found that the *Lingula* population had further declined to a maximum average density of 0.08 individuals/m², and a shift has occurred in the population to deeper reefs and sandy habitats.

Factors for Decline

The main threats are: 1) habitat degradation and alteration; 2) overexploitation; 3) pollution and sedimentation; 4) a vulnerable life history; and 5) a limited distribution.



**NOAA
FISHERIES
SERVICE**

Science, Service, Stewardship