

Inclusion of Humphead Wrasse *Cheilinus undulatus* in Appendix II. Proponent: United States of America.

Summary: The Humphead Wrasse *Cheilinus undulatus* is a large coral reef fish distributed widely throughout the tropical Indo-Pacific. Humphead Wrasse are particularly vulnerable to fishing, as they grow slowly, mature late, and are naturally uncommon. This species is also the most valuable fish in the live reef food fish trade (LRFFT) in Asia. There is evidence of decline due to exploitation (particularly for the LRFFT) throughout its range, but particularly in Southeast Asia. Most specimens are found in shallow water (< 30 m) and are easily accessible to spear fishing. The Humphead Wrasse's behaviour of hiding in crevices when chased also makes it particularly vulnerable to cyanide fishing. Current management and conservation measures are largely ignored. The driving force for this exploitation is the market demand in Hong Kong SAR and other markets in Asia.

Analysis: The available evidence suggests that the Humphead Wrasse meets the criteria for inclusion in CITES Appendix II. The widespread, documented population declines and pressure from the LRFFT indicate that harvesting has a detrimental impact on the species by exceeding, over an extended period, the level that can be taken in perpetuity. Because virtually all international trade is in live fishes, mostly for food but also for the aquarium fish trade, specimens in trade can be easily identified and implementation should therefore not be a problem.

Supporting Statement (SS)	Additional information
<u>Range</u>	
Throughout the Indo-Pacific region, from the Red Sea to the Tuamotus, north to the Ryukyus, including China and Chinese Taipei, east to Wake Island, south to New Caledonia and throughout Micronesia. It falls within the jurisdiction of 48 countries and overseas territories.	<i>The range includes India (Sluka, 2002; CMRFI, 1969).</i>
<u>IUCN Global Category</u>	
VU A1b+2ab	

Biological and trade criteria for inclusion in Appendix II

A) Trade regulation needed to prevent future inclusion in Appendix I

There are no global population assessments for the species, but local populations are described from reef surveys and other sources.

In Queensland, Australia waters, catch rates have remained stable at 20 kg/day/boat between 1993-1998, but there is obvious evidence of decline reported by several dive operators who report seeing fewer, and smaller, individuals. Historical information shows this species was common in the 1950s and 1960s, and that declines have coincided with increased fishing activity.

In Indonesia, catches of Humphead Wrasse declined from 50-70 kg per month in the early 1990s to 10-50 kg by 2000. Many fishermen note that the species is scarcer now compared with five years ago, that smaller individuals are being caught, and that fishermen have to travel further from home ports to catch this species.

The species is traded on the live reef food fish market, which serves luxury restaurants in Hong Kong SAR, China, Singapore and others. As a rare species, it commands prices from USD 90 to USD 175 per kg

*Erdmann (2002) states that the wild population is without question decreasing in a precipitous manner. There is evidence of population decline in Indonesia where a 40% decline between 1992 and 2002 in live coral cover due to destructive fishing practices (cyanide and bomb fishing) has been observed. This represents a significant reduction in habitat for this species at the centre of its south-east Asian range. It is now extremely rare to see large specimens anywhere in Indonesia, and even small specimens may not be encountered on a series of up to 10-15 dives. In the early 1990s at least two to five individuals were seen at the majority of dives. Randall (2002) observes that on a two week dive cruise in 1999 through Indonesia, not a single individual of *C. undulatus* was seen. Population declines as a result of decline in suitable habitat (coral reefs) are widely documented (Maragos et al., 1996).*

It is difficult to assess the area covered by this species, but it is certainly over several thousand km², and does not constitute a restricted distribution. The size of the global population is also very hard to estimate, but is well over 5 000 animals (Erdmann, 2002); it would not appear to be small.

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<p>(1997 retail prices in Hong Kong SAR).</p> <p><u>B) Harvesting for international trade has, or may have, detrimental impact on population</u> (i) exceeds sustainable yield; (ii) reduces population to potentially threatened level</p> <p>The Humphead Wrasse is the largest member of the wrasse family (Labridae), growing to over 2 m and 190 kg. The species can live for at least 30 years, and become sexually mature at 5-7 years. The generation time is expected to be >10 years, and the rate of intrinsic population increase is likely to be low. Its large size, slow growth, longevity and variable recruitment imply that this species is expected to have low rates of replacement and to therefore be particularly vulnerable to over-fishing. In addition the species is hermaphroditic (with female to male sex change), which may make it more vulnerable to over-fishing than species that do not change sex (if a fishery selects for larger fish).</p> <p>Humphead Wrasse are extremely patchily distributed, with adults confined to steep outer reef slopes, channel slopes, and lagoon reefs in water 1-100 m deep. Natural densities are evidently never high, even in preferred habitats. Adult densities in preferred habitats are estimated at 1-10 animals per 5 000 m² of reef.</p> <p>Experiences in the live reef food fishery for luxury Asian restaurants indicate serial over-fishing in the Indo-Pacific. Numbers are now negligible at edge of range sites such as Hong Kong SAR and in the South China Sea. Humphead Wrasse became so depleted from export fisheries in the Maldives that exports were banned in 1995.</p> <p>The IUCN/SSC Grouper and Wrasse Specialist Group note that under the proposed FAO/CITES criteria for assessing extinction risk in marine species, the Humphead Wrasse falls within FAO's lowest productivity category, indicating vulnerability to overexploitation.</p>	<p><i>Adults are often solitary or paired and appear to be sedentary (Sadovy et al., 2002). There is evidence of a preference for habitat sites on the outside of an atoll rim rather than reefs located within an atoll rim (Sluka, 2000).</i></p> <p><i>Harvesting has seriously reduced populations in Indonesia and the Philippines, and has now spread throughout Indian and Pacific oceans. It is believed that in Southeast Asia populations of Humphead Wrasse are approaching potentially threatened population levels (Erdmann, 2002; Kulbicki, 2002).</i></p> <p><i>Trade for Humphead Wrasse in Yadua Taba island, Fiji, is highly unsustainable. An almost unexploited population was depleted to the point of extirpation in less than six months (Dulvy, 2002).</i></p> <p><i>Under current conditions (i.e. in the presence of LRFFT) it is estimated that 10% of juveniles mature as females, and less than 1% reach maturity as males (Erdmann, 2002). Estimates of maturity rates in unexploited populations are not available, but are likely to be higher than current estimates.</i></p> <p><i>Where uncontrolled spear fishing occurs, stocks appear to be adversely affected, especially if SCUBA is used (Madagascar, Fiji, Tahiti, Guam, China and islands of the South China Sea). Declines are particularly striking when a LRFFT export fishery is introduced with marked losses of larger individuals and declines in catch rates have been reported. In places with some degree of effective protection the condition of local stocks appears to be reasonable, as far as can be determined (e.g. Australia, Maldives, Palau) (Sadovy et al., in prep).</i></p>

Other information

Threats

Threats include (1) intensive and species-specific removal for the LRFFT, (2) spear-fishing at night with SCUBA gear; (3) lack of co-ordinated, consistent national and regional management; and (4) illegal, unregulated, or unreported (IUU) fisheries. In addition, the species' essential coral reef habitat is seriously threatened by human activity throughout the Indo-Pacific region.

Demand for Humphead Wrasse is projected to grow, as the LRFFT expands and wealth in Asia grows. Large vessels that transport live fish have access to remote and significant refugia for this species, which will probably disappear if the species' value continues to increase.

There has been speculation that Humphead Wrasse can be cultured to meet international demand.

The SS is complete in its description of the threats to this species, although the threat posed by LRFFT cannot be overestimated. A single three kg fish can fetch a fisherman over a month's average salary, suggesting that economic extinction in this fishery will not occur before the risk of biological extinction is serious (the contrary is often argued for other fish species) (Erdmann, 2002).

Humphead Wrasse aggregate to spawn, and are extremely vulnerable to collection at this time. Discussions with fishermen in Indonesia indicate that they have often completely 'cleaned out' spawning aggregation sites during full moon periods (Erdmann, 2002). The fish's habit of sleeping in caves or crevices makes it extremely vulnerable to night spear-fishing and night cyanide fishing. LRFFT divers understand the habits of this species well and exploit it to its fullest

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<p>However, collection of juveniles to raise in culture may pose a threat to wild populations. There is also a developing export market for juvenile Humphead Wrasse for the marine aquarium trade. As a sequential hermaphrodite, the consequences of removing juveniles from the population are poorly understood.</p>	<p>(Sadovy, 2001).</p> <p><i>Between 1995 and 1999, the average price for live C. undulatus paid to Indonesian fishers rose from USD 22.2 per kg to USD 40 per kg. During this time, the average salary in Indonesia was less than USD 40 per month. It is estimated that 70-90% of fish held in Indonesia for export are immature or mature females (with the vast majority of large males already harvested). By 2002, many fish cages around the Indonesian archipelago had closed because there are no grouper or wrasse remaining on nearby reefs (Erdmann, 2002).</i></p>

Conservation, management and legislation

The are no regional, and few national, efforts to manage the LRFFT. Significant importers (e.g. Hong Kong SAR) do not require landings reports by locally licensed vessels (of which there are 4 000). This is a significant reporting exemption, resulting in serious underestimation of Hong Kong SAR import volumes.

Volumes of reported legal trade in Humphead Wrasse are low, and range from 38 to 132 tonnes during 1997-2000, imported to Hong Kong SAR.

Due to over-fishing, Humphead Wrasse are banned from export in many areas of the Indo-Pacific: Maldives, Palau, Palawan Islands (Philippines), Western Australia and Niue. Nevertheless, banned specimens still appear in Hong Kong SAR markets, and traders acknowledge that smuggling is common.

Humphead Wrasse is prohibited from harvest in Western Australia because the stocks were not large and were highly susceptible to over-fishing. Fisheries in other parts of Australia may also end because Humphead Wrasse have been implicated in ciguatera poisoning in Hong Kong SAR.

The Maldives banned the export of Humphead Wrasse in 1995 based on concerns about loss of the fish from recreational diving sites. However, in 1998, Hong Kong SAR imported 100 965 kg of Humphead Wrasse from the Maldives, worth USD 635 000.

In Palau, the export of Humphead Wrasse was suspended in 1998 due to fears of overfishing. National laws also prohibit trade in specimens <25 cm.

In the Philippines, the province of Palawan banned the export of Humphead Wrasse in 1994 because of overfishing concerns. It is unclear whether other provinces have followed suit, or whether the Palawan ban is still in effect.

For the purposes of LRFFT, the vast majority of Humphead Wrasse are caught using cyanide squirt bottles, which are illegal in Indonesia and many other states. Ninety to ninety seven percent of fish in Indonesia are captured illegally. The Indonesian ban on the export of fishes over 3 kg is also not well enforced, meaning many fish (15-20% exported fish are >3 kg) are illegally exported.

In Bunaken National Park (North Sulawesi, Indonesia), Humphead Wrasse are recorded on manta tow surveys of the park's reefs. The most recent survey (July 2002) shows a very strong effect of no-take zones in protecting this species. However, only 5% of Indonesian species habitat is found in Marine Protected Areas (Erdmann, 2002).

Monitoring programs, which will include Humphead Wrasse, are being established by PROCFISH (conducted by the Secretariat of the South Pacific) for 12 countries over the next five years (Kulbicki, 2002).

Supporting Statement (SS)	Additional information
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Similar species

In international trade, Humphead Wrasse are traded almost exclusively as live specimens for the luxury food market. Given the species' unique appearance at all stages of its life history, it is unlikely to be mistaken for other species. Shipments arrive by sea or air terminals, where inspections are routinely carried out for other species.

This species is well defined and presents no geographical variations, even though it ranges from East Africa to French Polynesia. The species is easily recognised. Juveniles under 10 cm may be harder to distinguish, and may be confused with C. trilobatus or C. chlorurus, however even young fish have distinctive features (Kulbicki, 2002).

Other comments

Consultation letters concerning the proposal were sent to all range states. Australia, Israel, Thailand, and France expressed support for the proposal.

China (Hong Kong SAR) authorities responded that it was difficult to ascertain the benefits of a CITES listing and stated that any benefit might be diminished by the fact that destructive fishing practices posed the greatest threat to the species.

Reviewers: N. Dulvy, M. Erdmann, M. Kulbicki, J. Randall, R. Sluka, TRAFFIC East Asia, TRAFFIC Oceania.

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