The Threatened Status of Sharks and Related Species

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This paper summarises the work being undertaken by the IUCN/SSC Shark Specialist Group[1] (SSG) to complete Red List[2] threatened status assessments of all chondrichthyan fishes[3].

The threatened status of sharks and related species

Chondrichthyan fishes are an evolutionarily conservative group that has functioned successfully in diverse ecosystems for 400 million years. Despite their evolutionary success, some chondrichthyan species are now threatened with extinction as a result of human activities. Many, if not most, grow slowly, mature at relatively late ages, produce a small number of young and have low natural mortality. These characteristics result in little capacity to recover from overfishing (either direct or indirect) and other human impacts, including pollution and habitat destruction. Unfortunately, knowledge of the population status of most of the known species is seriously limited.

The SSG has thus far assessed the threatened status of 266 species of chondrichthyan fishes, with the results published in the 2000 IUCN Red List of Threatened Species and forthcoming in the 2003 Red List later this year.[4] Red List assessments for approximately 150 additional species have been undertaken recently, but have not yet been reviewed and approved by the Specialist Group prior to submission to the IUCN Red List Programme. The aim is to complete, by consultation and consensus within the SSG, Red List assessments for all ca. 400 species of sharks, and for as many as possible of the other ca.600 species (rays and chimaeras) in time for publication in IUCN's major Red List analysis in 2004. Comprehensive status assessment of the entire taxonomic group for the IUCN Red List is one of the SSG's most important tasks because it will, for the first time, establish a baseline against which to monitor future changes in the global and regional status of chondrichthyan fishes and improvements in our scientific knowledge of this group. This information will be a powerful tool with which to promote improvements in the management of these biologically vulnerable species and the research necessary to deliver successful management.

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[1] The IUCN Species Survival Commission established the Shark Specialist Group (SSG) in 1991, in response to growing awareness and concern of the severe impact of fisheries on chondrichthyan populations around the world. The SSG provides leadership for the conservation of threatened species and populations of all chondrichthyan fishes (over 1,000 species) and aims to promote their sustainable use, wise management and conservation. There are ~130 SSG members around the world, all of whom are actively involved in chondrichthyan research and fisheries management, conservation or policy formulation. The SSG is divided into nine ocean-region subgroups, led by an Executive Committee of Regional, Deputy and Co-Chairs. A full time Programme Officer works with the Executive Committee to coordinate the work of the group, but the majority of its members provide their time and input voluntarily.

[2] The *IUCN Red List of Threatened Species*™ is widely recognised as the most comprehensive source of information on the global conservation status of plant and animal species. Red Lists are among the most widely used tools available to conservationists worldwide for focusing attention on species of conservation concern. They enable management priorities to be targeted and may be used to monitor the long-term success of management and conservation initiatives. The assessments evaluate the conservation status of individual species, identify threatening processes affecting them and, if necessary, propose recovery objectives for their populations. Where entire taxonomic groups are assessed, the assessments can be used as a tool for measuring and monitoring changes in the overall status and knowledge of those taxa.

[3] The term 'sharks' is generally used to refer to the Chondrichthyan fishes, which comprise elasmobranchs (sharks and batoids; batoids include the sawfishes, skates and rays) and holocephalans (chimaeras and rabbit fishes).

[4] Species assessed as Least Concern do not appear on the 2000 Red List database (www.redlist.org), although full details of these are included in Fowler *et al*. (in press) and Cavanagh *et al*. (2003).

SHARK Specialist Group

Established to promote the sustainable use, wise management and conservation of all chondrichthyan fishes (the sharks, rays and chimaeras)

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Of the 274 assessments that have been confirmed to-date, 59 were classified as globally threatened, with an additional 21 threatened on a regional basis, and 63 as Near Threatened. A further 69 species are currently classified as Data Deficient, meaning that inadequate information is available on their distribution and/or abundance and population trends to make an assessment of their extinction risk. The status of species assigned to a threatened category must be monitored closely, and research conducted without delay to better understand their biology, threats and conservation needs, and to implement management and recovery plans where necessary. Likewise, Data Deficient species should be considered a high priority for further research; many of these species may also be under serious threat and in urgent need of management action.

Table: Red List Assessments for chondrichthyan fishes submitted to the IUCN Red List, 2000-2003.

Red List Category	Sharks	Rays	Chimaeras	Total
Critically Endangered	4	3	0	7
Endangered	5	13	0	18
Vulnerable	22	12	0	34
Conservation Dependent	4	0	0	4
Near Threatened	58	5	0	63
Data Deficient	56	12	1	69
Least Concern	65	11	3	79
Total	214	56	4	274

Reviews of the assessments undertaken to date indicate that the taxa at highest risk of extinction include commercially exploited species of deepwater sharks taken in multi-species fisheries, species restricted to freshwater and brackish water habitats, and coastal endemics whose entire range is subjected to intensive fisheries.

Developing Red List Assessments for chondrichthyans

The Shark Specialist Group is undertaking its Red List Assessments through a series of regional and thematic workshops, the results of which are reviewed and agreed by the entire Specialist Group (IUCN's Red List Authority for the taxa). These workshops provide training in the Red List assessment process, facilitate detailed discussions on the status of species by local and international experts, assess the conservation status of chondrichthyan fishes within the region, identify species of conservation concern, and help develop broader priorities for future research and management. Three regional workshops have been held to date, for Australasia, South America and, most recently, Sub-equatorial Africa. Several more are planned: Mediterranean (September 2003), Deepwater species (November 2003), Batoids (March 2004), North and Central America (June 2004). Others are still to be confirmed.

Sources of information

Cavanagh, R.D., Kyne, P.M., Fowler, S.L., Musick, J.A., and Bennett, M.B. 2003. *Conservation Status of Australian Chondrichthyans: Report of the IUCN Shark Specialist Group Australia and Oceania Regional Red List Workshop*. 170 pp. University of Queensland – School of Biomedical Sciences, Brisbane, Australia.

Fowler, S.L., Camhi, M., Burgess, G.H., Cailliet, G.M., Fordham, S.V, Cavanagh, R.D., Simpfendorfer, C.A. and Musick, J.A. In press (2003). *Sharks, rays and chimaeras: the status of the chondrichthyan fishes.* IUCN SSC Shark Specialist Group. IUCN, Gland, Switzerland and Cambridge, UK.

IUCN Red List website http://www.redlist.org

Shark Specialist Group website http://www.flmnh.ufl.edu/fish/Organizations/SSG/SSGDefault.html