

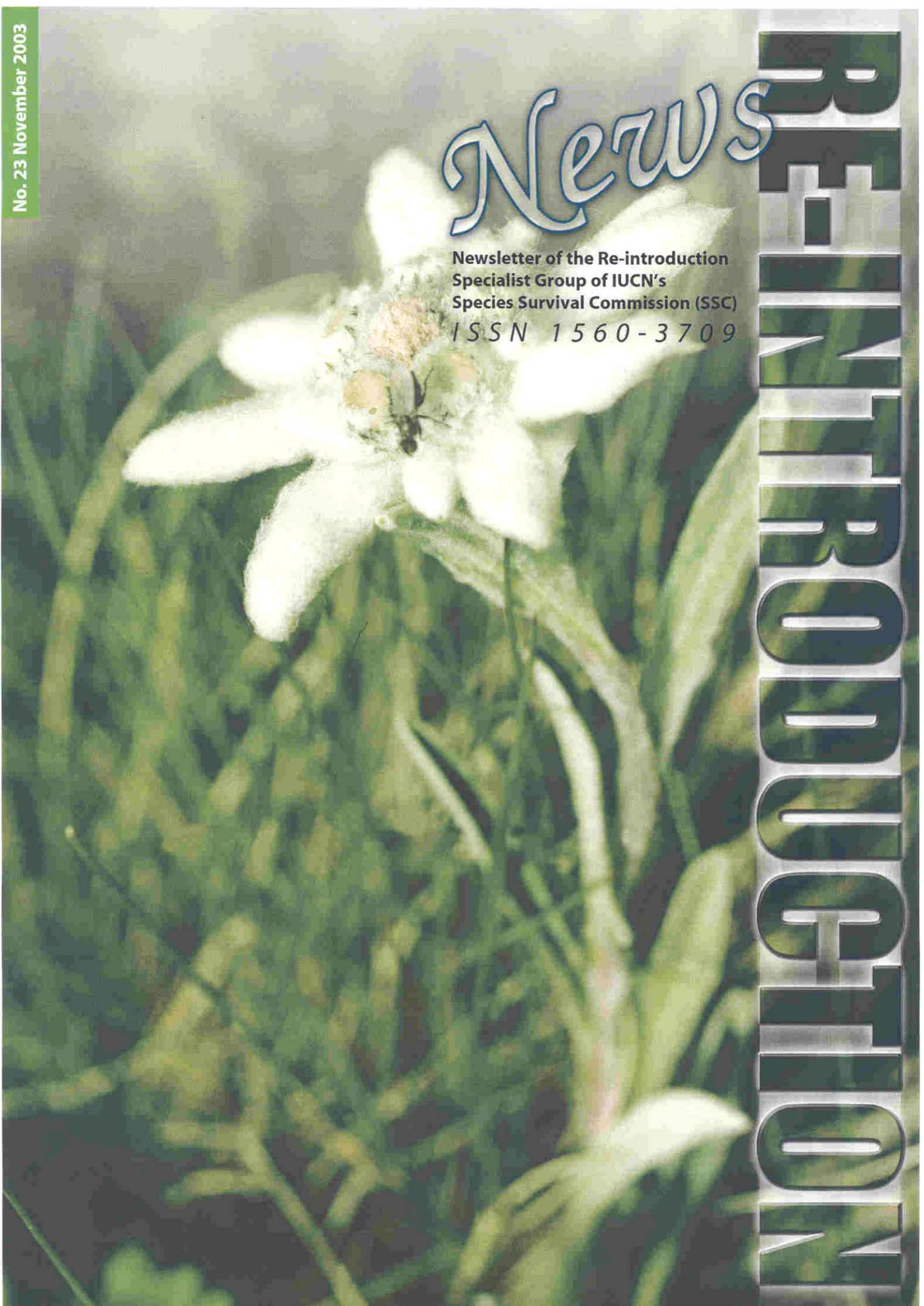
No. 23 November 2003

News

Newsletter of the Re-introduction
Specialist Group of IUCN's
Species Survival Commission (SSC)

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RE-INTRODUCTION



Re-introduction News

No. 23 November 2003

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هيئة أبحاث البيئة والحياة الفطرية وتنميتها
Environmental Research and Wildlife Development Agency

IUCN
The World Conservation Union



SPECIES SURVIVAL COMMISSION

RSG MISSION:

To combat the ongoing and massive loss of biodiversity by using re-introductions as a responsible tool for the management and restoration of biodiversity through actively developing and promoting sound inter-disciplinary scientific information, policy, and practice to establish viable wild populations in their natural habitats

COVER PHOTO

The Edelweiss (*Leontopodium alpinum*) is a tough, drought-resistant plant with its hairy leaves and flowers, that grows in the Alps and is symbolic of Switzerland.
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RSG Resource CD v 1.0 Jan 2003

The RSG produced and disseminated a resource mini-CD in January 2003. This CD was produced for two main reasons:

- ◆ To fulfill the objectives of the RSG and Species Survival Commission (SSC) Strategic Plan. The SSC Objective 3 calls for increased capacity to provide timely, innovative and powerful solutions to conservation problems through internal and external access to SSC publications, products and lessons learned.
- ◆ Due to a diminishing stock of hard copies of past RSG literature coupled with high mailing costs of hard copy material. The CD has been extensively distributed and is also accessible through the RSG website at www.iucnsscrrsg.org.

The CD contains, 1) a general introduction, 2) 22 issues of the RSG's newsletters (November 1990-January 2003), 3) RSG guidelines, SSC and other conservation policies and reports, and, 4) Re-introduction Practitioners Directory, RSG library bibliography, RSG and SSC Strategic Plans.

We would like to take this opportunity to thank the following organizations for their support, production and distribution of this CD:

- ◆ Denver Zoological Foundation, USA
- ◆ Environmental Research & Wildlife Development Agency, UAE
- ◆ Durrell Wildlife Conservation trust, Channel Islands
- ◆ National Tropical Botanical Garden, USA

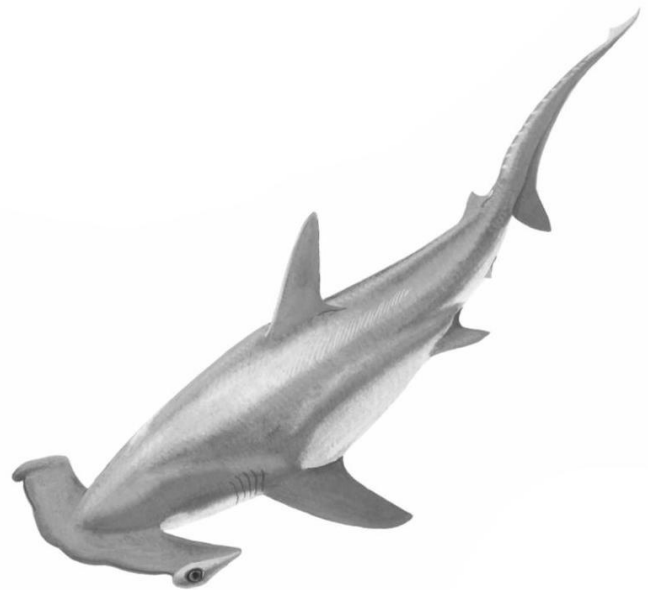
FISH

The release of sharks from public and private aquariums

Sharks are an integral component of marine ecosystems and are now a major conservation concern. Globally, shark populations are in trouble, with a recent study in the Northwest Atlantic finding that total populations of sharks such as scalloped hammerheads, whites and threshers have each dropped by over 75% in the past 15 years (Baum *et al.*, 2003). This decline is largely attributed to the expansion of fishing fleets out into the open ocean in the last 50 years. The study estimates that all recorded shark species, with the exception of makos, have declined more than 50% in the past eight to 15 years. In other species, such as the hammerhead shark, the population has dropped by 86% since 1986.

Shark fisheries have expanded in size and number around the world since the mid-1980s, primarily in response to the rapidly increasing demand for shark fins, meat and cartilage. Despite the boom-and-bust nature of virtually all shark fisheries over the past century, most shark fisheries still lack monitoring or management. For example, only a handful of the 125 countries that are now involved in shark fishing and international trade have even the most minimal management in place, and there is still no management for sharks fished on the high seas. As a result, many shark populations are now depleted and some are considered threatened (Camhi *et al.*, 1998). At the 2002 CITES Conference of the Parties, both the whale shark and basking shark were accepted for listing under Appendix II (www.cites.org).

Sharks are widely held in zoos and aquariums and, increasingly, education and awareness of the conservation issues facing these large marine predators is being shared with millions of visitors. In general, their life history means that these fishes are currently unlikely candidates for captive breeding and re-introduction programs. However, an important benefit of captive breeding programs is the collection of information about reproductive strategies, growth



Hammerhead shark (*Sphyrna lewini*)
© Rolf Williams, National Marine Aquarium, Plymouth

rates, maturity and other life history parameters. This information may be used by policy makers, with appropriate caution, to help formulate elasmobranch conservation management strategies (Rose *et al.*, in press.). The release of captive sharks has occurred historically and continues today. In general, little thought has been given to the scientific robustness of such activities and in some cases re-introduction has been used as a means of disposal of unwanted specimens, against the recommendations of the IUCN Re-introduction Specialist Group, and other professional organization guidelines e.g. AZA, 1992. One area of increasing concern is the release of sharks from the private sector, specifically from misguided acquisitions of

species that grow extremely large yet are available in the hobby, such as nurse sharks. Some animal activist groups are actively campaigning to rescue sharks from pet shops, restaurants and nightclubs and return them to 'the wild'.

Approach

This subject has been under discussion within the aquarium community and this article aims to outline some of the considerations with regards to the release of sharks. The information in this article was obtained through basic questionnaires, e-mail discussion fora and panel discussions at aquarium conferences.

Discussion

There must be a reason to release any species into the wild, for example if the species has become locally extinct or supplementation of a small population is required to correct skewed sex ratios. The *IUCN Guidelines for Re-introduction* clearly state that the availability of surplus stock is not a reason to release animals into the wild. Many of the common species kept in aquariums have been released into the wild, including Caribbean reef, lemon, nurse, sandbars, sand tigers, silky and seven-gill sharks and dogfish. The reasons behind the release may be that the animal has outgrown a facility, or is surplus to requirements. On a number of occasions, sharks have been released after very short periods in captivity (days to weeks).

There is only one documented report of shark releases from an aquarium as part of a co-ordinated conservation program that is looking to improve the status of the species in the wild (Henningsen *et al.*, 1996). The National Aquarium in Baltimore (NAIB), USA is located near the Chesapeake and Delaware bays, which are important nursery areas for the sandbar shark (*Carcharhinus plumbeus*), and other migratory coastal species. For the past 16 years, NAIB has collected elasmobranchs for display using bottom set longlines in the Delaware Bay. In addition to capturing animals for display, over 250 sharks have been tagged in conjunction with the National Marine Fisheries Service Apex Predator Investigation Program: (<http://na.nefsc.noaa.gov/sharks/intro.html>). Juvenile sandbar sharks are maintained in captivity for one year, and then tagged and released into the Delaware Bay. During their stay in captivity, information is collected on their growth and food intake as well as tag shedding. The program has also been used to gather data on biology and reproductive physiology (endocrinology). Blood samples collected from wild-caught sharks are examined for cell morphology, counts and distribution. There is little clinical information on elasmobranch haematology and these data also serve as a reference for health assessment of captive sharks.

The best documented information on a single released shark is from a sevengill known as 'Big Emma' at Monterey Bay Aquarium (Van Dykhuizen, 1998). After four years, Big Emma had developed an abrasion on her snout and was showing potentially aggressive behavior to divers in the tank and a decision was made to release her. The shark was tagged with an external identifying tag and released into the Monterey Bay. On 16th October 1994, in Humboldt Bay, two years and four months after her release in Monterey, a

sportfisherman captured Emma. She had returned to the same bay she came from six years before, a distance of about 400 miles. Rose *et al.* (2003) outline the many problematic issues that emphasise the need for extreme prudence when formulating elasmobranch re-introduction programs. There are valid concerns that re-introduction could potentially expose discrete 'wild' elasmobranch communities to exotic parasites or 'exotic' genetic material. In addition, re-introduced elasmobranchs, that have previously received antibiotic treatment, may be carriers of resistant strains of pathogens. Finally, the consumption of re-captured elasmobranchs may represent a health risk if they were given a chemico-therapeutic agent during their time in captivity.

Professional aquariums recognize the importance of veterinary screening of sharks prior to release, and many institutions have comprehensive routine health monitoring procedures in place independent of any release programs. There is some evidence that elasmobranchs, and especially sharks, are less prone to many of the pathogenic parasites that affect bony fishes with similar ranges. However, concerns of exposure to new species of pathogen or those that have a different virulence than native populations

Some animal activist groups are actively campaigning to rescue sharks from pet shops, restaurants and nightclubs and return them to 'the wild'.

remain a concern. Tagging released animals has taken place in some cases. In the USA this has been with National Marine Fisheries Service (NMFS) shark tags, or with PIT (physical implant) tags. A concern is the generally low rate of returns for tags of this kind (<6% in the NMFS Apex Predator Cooperative Shark

Tagging Program) means that data on the survival or otherwise of released sharks is potentially limited. However, considering the overall lack of information on most shark species, this data has still proved valuable. Satellite tracking is potentially able to provide better information, such as environmental parameters, though only for relatively short time periods after release. A limitation is that these tags are expensive but they are designed to estimate daily position and environmental data, such as temperature and depth.

The legislation controlling releases of native elasmobranch species to areas within their natural range is limited. In North America, there is no written rule or policy regulating their release, though prior permission is required in some states. However, if the animal had ever been treated with any non-FDA (Food and Drug Administration) approved drug that could affect a human that caught and ate the animal, then the release is forbidden, except with drugs approved for use on food fishes after appropriate depuration. In the UK, there is no legislation controlling release of native species, though as with many countries, the release of non-native species is banned. Shark releases are of single individuals rather than large numbers and the total number of animals released is relatively known (though not well documented). The potential negative impact on wild populations is therefore potentially limited, though the benefit of the release, even from an individual welfare point of view, is likewise limited. Pre-release preparations have included the holding of species in lagoon areas prior to release and feeding of live prey for two weeks prior to release. One of the benefits of the release of sharks has been the publicity received that has often been used to raise awareness on shark conservation issues. A concern is that

the fate of some of the sharks rescued from poor facilities, such as the nurse shark exhibited in a Burger King fast-food restaurant in Toronto, Canada, and another in a nightclub in Detroit, USA is that they would otherwise be euthanised. The abundance of these species as unwanted pets has overwhelmed public aquariums that no longer have capacity for these fishes.

When considering the large coastal sharks in pet trade, the issue lies with the inappropriate nature of the acquisition. The individual may not be aware of the final size of the animal, as is common for many other fish species purchased through the pet trade. Education and responsibility in the pet trade is required, as exemplified by associations such as OATA (Ornamental Aquarium Trade Association). The institutional and regional collection planning process being undertaken by aquariums and their related associations namely the American Association of Zoos and Aquariums (AZA); European Association of Zoos and Aquariums (EAZA); European Union of Aquarium Curators (EUAC) encourage the appropriate collective management of species in facilities and reduce the issues of over-population of species and the holding of species in inappropriate facilities.

Conclusion

The release of sharks as currently practiced has no obvious conservation benefit, other than data collection through tagging related research, and raises some significant concerns. It is clear that a more definitive policy needs to be developed and this is being undertaken by the respective North American and European Taxon Advisory Groups (AZA, EAZA/EUAC) with the IUCN RSG Fish Section Chair. Criteria will provide a way of evaluating current practices and may eliminate some of the current industry collection practices.

To minimize the negative effects of shark releases, the immediate introduction of the following conditions is recommended for any captive shark that is being considered for release (adapted from Mohan, in press):

- ◆ They have been quarantined and housed only with sympatric species from the area where they will be released, to reduce the risk of spreading novel pathogens and disease.
- ◆ No water has been shared with non-sympatric display animals (as above).
- ◆ They have not been housed with individuals of the same species that have died from undiagnosed diseases.
- ◆ Fresh food (containing parasites) has been limited to sympatric species. Drug treatments throughout the animals' life have been limited to FDA approved aquaculture chemicals.
- ◆ Entire captive custody history is known so all above can be confirmed (including the holding situation at collectors, wholesalers, other facilities where animals formerly resided, etc).
- ◆ Releases are not "imprinted" on humans e.g. through hand-feeding, and therefore would be no threat to swimmers etc.
- ◆ Full health screening is carried out prior to release and the complete medical history is known.
- ◆ The animal can be returned to the point locality of

collection in the wild.

These rules make releases from many exhibits unlikely. Moreover, they would impact the collection of animals for experimental husbandry trials by some facilities. They are, however, no obstacle to releases of animals in a number of situations. Open systems containing endemic (to the display location) animals in particular, would not be affected by these guidelines. Except where they meet all of the above criteria, releases are not part of a responsible collection plan and animals should be retained for life, which includes transfer to other facilities. The release of sharks is not currently part of any conservation management plan, but their use in public education programs in aquariums is a vital component of their conservation.

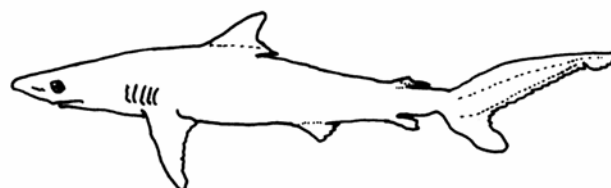
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