

Aquatic Survival

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Aquarists Dedicated to the Preservation of Aquatic Life

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Red Listing Marine Fishes

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Elodie Hudson

Marine fishes have long been under-represented in IUCN Red Lists of threatened species. In the 1994 Red List, 979 species of fishes were listed, of which less than 2% were marine species. Of these, most were classified under the old categories "Indeterminate" or "Insufficiently Known." No one would consider this shortage of red-listed species to genuinely reflect a better conservation status for marine fishes. Rather, the deficit is in large part due to marine fishes not having been evaluated and reflects the neglected state of marine conservation biology in general (Murphy & Duffus 1996). Red lists are intended to provide an objective way of flagging species of conservation concern using a classification system that is believed to be applicable to both terrestrial and marine realms. The new categories and criteria (IUCN 1994) will be used for the first time in the 1996 Red List, providing a timely opportunity to address the scarcity of evaluated marine fishes.

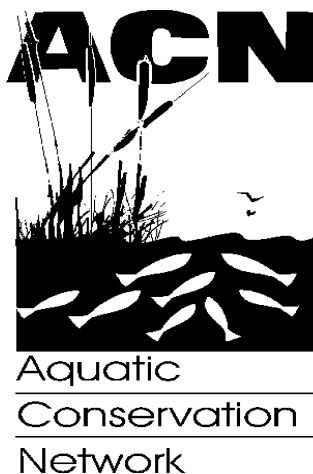
The marine fishes red-listing process was given a kick-start in April this year (1996) with a three-day workshop held by the Institute of Zoology (Zoological Society of London) and IUCN, with generous funding from WWF's Endangered Seas Program. The workshop also formed part of a longer-term collaborative effort between SSC and the Institute of Zoology to look at the applicability of the new IUCN categories and criteria to marine fishes. Concern had been expressed

about the applicability of the criteria in the marine realm, since they had been developed mostly around terrestrial models.

We invited 31 scientists from around the world. Among them were marine fish experts from a variety of backgrounds, as well as representatives from the IUCN Species Survival Commission. Details can be found in the workshop report (Hudson & Mace 1996). The outcomes of the workshop are also discussed by Vincent & Hall (1996). The workshop was chaired by Georgina Mace, and we also benefited greatly by having Jonathan Baillie and Mariano Gimenez Dixon present. As we frequently discovered, intimate knowledge of the criteria is just as important for making classifications as intimate knowledge of the species and their biology.

The workshop had three aims: (1) to evaluate the applicability of the new criteria to marine fish species; (2) to evaluate candidate marine fish species for inclusion in the 1996 Red List; and (3) to develop recommendations for future management of marine fish issues within the IUCN/SSC. Unfortunately, we only really had time to address the first two.

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Message from the Editor

As most of you may know by now, Rob Huntley stepped down as editor of *Aquatic Survival* last year. In fact December 1996's issue was the first issue with me at the wheel. Rob has kindly offered to help me while I get used to this new position as this is my first endeavor at publishing.

I would like to take this opportunity to thank Rob for the great work he has done in the past. While he has passed on the responsibility of *Aquatic Survival*, he is still very much involved with ACN. He is still the General Manager and as such is responsible for it's day to day operations. Keep up the good work.

Credit where credit is due

I would also like to thank my wife. If it wasn't for her diligence (and speedy typing skills) December's issue would have been delayed more that it already was. I had been working long hours so was unable to really put any time into *Aquatic Survival* (not a good way to start). All I could do was pick some articles I wanted to see in the issue, and leave post-it notes everywhere letting her know what I needed done. She almost single handedly put together the entire issue....Thanks, Tammy.

A little about me

A long time ago, in a galaxy far, far away..... Sorry wrong story. (credit to George Lucas for that line)

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My first experience with aquatic preservation was at the age of 4. I put a set of keys through the front of my father's aquarium. As I recall, all the fish survived.

I have been around aquaria for as long as I can remember. My grandfather had a pond in his back yard and my father has almost always had a tank or two (or a pond in his living-room...but that's another story). My wife bought me my first tank just after we got married. At that point I dabbled with tropicals, the odd goldfish, and then marine.

I never had the financial resources or the space to do any serious captive breeding, but I always thought that hobbyists like myself could do something to help preserve aquatic life.

I was given a gift membership to ACN in November of 1992, almost at its beginning. I liked what ACN was trying to do, so I continued to support the organization. I decided to do something to help ACN when Rob sent out a call for someone to take over the membership database.

After holding the title of Membership Co-ordinator for a couple of years, I felt it was time to do more. So then came the Electronic version of *Aquatic Survival*. I started publishing past issues on the World Wide Web. Rob had stated to the ACN Board of Director and other Officers that due to other commitments he was not able to continue as editor of *Aquatic Survival*. After some soul searching, I volunteered to take it on. Rob's first response was "Are you crazy?", my answer is "probably" but I felt I was up to it. So, here we are...my second issue, and my first editorial.

You can make a difference

So you ask what's the point of my rambling? Well it's this; You don't have to have a degree in marine

biology to make a difference. The Aquatic Conservation Network's "motto" is "Aquarists Dedicated to the Preservation of Aquatic Life". Not all aquarists are scientists. That's not to say that scientific works are not important -- they are very important -- but there is a lot that a concerned hobbyists can do. Whether through joining an organization like a local aquatic society that promotes conservation, or captive breeding programs, or even helping in the administration of such an organization.

But in ACN's case, you can help spread the word. We need articles for *Aquatic Survival*. If you have had success breeding an endangered species, tell us about it. If you or your organization is working on a particular project that could educate or enlighten the rest of us, let us know. Even if you know a "non" member who is doing something of interest, encourage them to submit an article. Remember it's not just other ACN members that will get to read your article. Articles from *Aquatic Survival* have been re-printed in other publications, and it will eventually get posted to the Web for the world to see.

This is your newsletter, and I would like to hear from you. So drop me a line at the address on the front page or by e-mail at editor@acn.ca.

Until the next issue

Dean Staff

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Message from the President

Dear members!

Our network is currently going through a reorganization phase. During ACN's growing years, Rob Huntley has been an increasingly busy General Manager and his invaluable input has very much shaped what the ACN is about. We all have capitalized on his resources. Rob had to start [working for income] over a year ago which has limited his time availability for ACN agenda. This severely impeded necessary work and ACN projects confirming how much we relied on Rob's activities. First of all, I'd like to thank Rob for all that he has done for the ACN! Fortunately, he will continue steering our network as a Director. The other new BOD Members are Paul Loiselle and Mark Rosenqvist (both back after a little break).

Early on, priority has been set for securing the publication of *Aquatic Survival* and we are very glad that Dean Staff jumped in right away as our new Editor. Note that it is our main means for communication within the Network - please send Dean at least a short note if you have something to share, to ask or to announce. Larger contributions are always welcome too!

Another area of networking and providing ACN-related information are electronic resources on the internet and the ACN mailing list. There is a small group of dedicated people including Norval Collins, Mike Florez, Frank Greco, Rob Huntley, Joshua Levy, Thuan Nguyen, Dean Staff, and Peter Unmack who set up and maintain these services for members as well as the general public. Check it out! The current changes should result in additional available information.

We are fortunate to have an active UK chapter with several members including Peter Burgess, Tony Cotter and Paul Davies spending their energy and funds for providing ACN material and information on a national level. If there are some ACN members in your home country, please think about setting up a local contact. Our membership is still heavily biased towards North Americans. Part of the problem has been the fact that making membership payment often gets heavily charged by local banks which sometimes almost doubles the actual fee. Being able to charge credit cards would certainly result in a more international

membership which I believe is of prime importance for many conservation issues, especially *in-situ* projects. Negotiation with banks were previously impeded by their insistence on a huge deposit as a security against misuse by fake companies. Apparently distrust in NGO's (non-governmental organizations) seems to be a quite widespread phenomenon in the financial world. Patrick de Rham and I would be willing to loan considerable sums for this purpose and if you are able to do the same, this would certainly help us to go ahead with providing this important service to you and other members.

After extensive discussions, the current Board of Directors decided to split the General Manager job into several positions with restricted responsibilities. This doesn't imply that there will be less administrative work but that we should be able to offer more manageable jobs to willing volunteers. Currently all the major workload is actually done by only two dedicated individuals! This is not enough to run an important network (especially if aimed at Herculean tasks like conservation of our aquatic environment) and Rob and Dean are certainly not the ones to blame for any shortcomings -- it's us! We are not members in a famous club called ACN - it's a NETWORK which only lives through many people's contributions. Please write me a short note how much time (e.g. 1 hour per week/month) you are willing to spend on ACN agenda (please state special interests or experience) and we will try to find a suitable task. Your contribution will certainly help us all to start out with fresh vigor!

Aah, finally: I like bleaks! These small, silvery cyprinids are called *Alburnus alburnus* (Linne, 1758) and their dedicious scales were once used to fabricate artificial pearls -- little precious bleaks...

Kai-Erik Witte

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Red Listing Marine - continued from Page 1

The Applicability of the New Criteria to Marine Fish Species

In most cases examined by the workshop participants, the classification system was flexible enough to accommodate marine fish life-histories (as far as they are understood) with the available data. Many problems were encountered using the criteria, although most were a question of interpretation and were resolved during the workshop. A set of preliminary guidelines and future recommendations based on these discussions were drawn up (Hudson & Mace 1996).

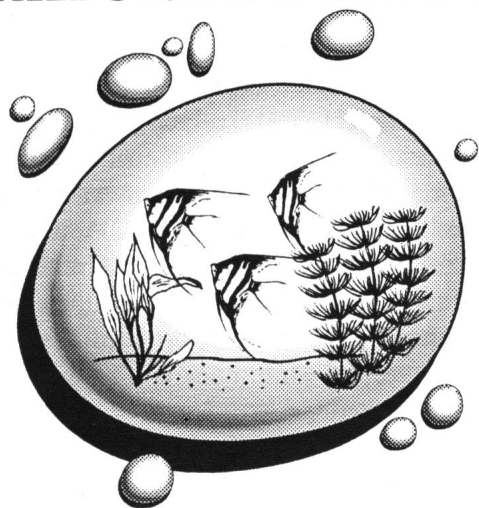
These guidelines focused largely around the definitions of terms used in the categories, such as "population," "mature individuals," "generation," "extent of occurrence," and "area of occupancy." For example. To measure a declining population of marine fishes (criterion A), an index of abundance appropriate for the taxon might be biomass of individuals as opposed to numbers of mature individuals. This approach would be suitable in species where fecundity increases with the mass of the adult fishes, which continue to grow throughout their lives.

Using range and distribution information for marine fish with the criteria raised a lot of issues. For example, the guidelines acknowledge that, in general, the area of occupancy is a more suitable measure for marine fishes than extent of occurrence. For this reason, it is stressed that the area of occupancy is the smallest area essential at any stage to the survival of existing populations of a taxon. This measure may be appropriate for species with specific spawning sites, breeding areas, or feeding grounds. The problem, however, is that the extent of a particular marine habitat is commonly unknown, and the potential area of occupancy cannot be estimated easily.

These and many other issues are covered in the guidelines, which are currently being elaborated and will appear as a guidelines booklet to aid future evaluators. Other issues proved more insoluble and are the focus of continuing work. One problem was significant enough that the participants agreed that it should be included as a caveat to the list of threatened fishes. It concerns the link between the criteria for Critically Endangered, Endangered, Vulnerable, and the corresponding risk of extinction specified. The issue here is whether the decline percentages in the criteria are overly precautionary in terms of pointing to extinction risk in certain marine fish species.

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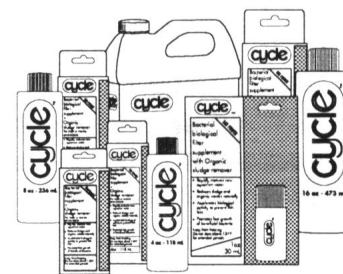


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“The Criteria (A-D) provide relative assessments of trends in the population status of species across many life forms. However, it is recognized that these criteria do not always lead to equally robust assessments of extinction risk, which depend upon the life-history of the species. The quantitative criterion (A1a, b, d) for threatened categories may not be appropriate for assessing the risk of extinction for some species, especially those with high reproductive potential, fast growth and broad geographic ranges. Many of these species have high potential for population maintenance under high levels of mortality, and such species might form the basis for fisheries.”

This issue of what the risk of extinction is in highly fecund species that have undergone population declines remains the most contentious, especially in the context of commercially important species. Conservation concerns clash with the interests of industrial fisheries: scientific methodologies, objectives, and the approaches towards precautionary principles differ between these two groups. There is also a widespread and ingrained belief that some fishes are inherently resilient to extinction and will not disappear, however hard they are fished. No one can deny that many fisheries have collapsed, but despite relentless exploitation, none are believed to be biologically extinct. In addition, even some of the most depressed stocks have made recoveries, as illustrated by the recovery of certain Atlantic fish stocks during the Second World War, when fishing all but ceased. Nevertheless, it makes intuitive sense that populations at severely reduced numbers are more at risk of extinction through stochastic (random) environmental events. Intrinsic (biological) factors could also be important, especially if compensatory dynamics operate at low numbers. For example, at low numbers, a population may not be able to withstand pressure from predators, or individuals may have trouble locating mates and reproducing. Both these factors would serve to accelerate the decline in numbers to the point of extinction. So far, evidence for this has been looked for in North Atlantic groundfish stocks, but no conclusive evidence has been found (Myers *et al.* 1995).

While the question of extinction probabilities remains unanswered, it does not rule out the value in classifying marine species using the IUCN system. The criteria are designed to pick up on those factors, such as declining population and small ranges, that we have good reason to believe are correlates of extinction

risk. In a system designed to be applicable across a broad taxonomic spectrum, it is inevitable that a range of extinction risks will be accommodated in each category of threat. This variance should be borne in mind.

Evaluation of Candidate Marine Fish Species for Inclusion in the 1996 Red List

During the course of the workshop, 148 species of marine fishes were evaluated using the new system. Results of these evaluations were all agreed to at the meeting, and the list has been submitted for inclusion in the *1996 IUCN Red List of Threatened Animals*. The species evaluated came from 40 different families and 18 orders. They included sharks, tunas, billfishes, groupers, coral reef fishes, seahorses, pipefishes, pegasid fishes, teleosts such as cod and haddock, snappers, mackerels, wrasses, halibuts, yellowtail flounders, catfishes, and many others. The selection of species for evaluation was entirely in the hands of the participants and was in no way representative or systematic. Nevertheless, of those species considered, 80% fell into a threatened category, the majority of which were vulnerable (61%). Ten species qualified as Critically Endangered (7%).

Among fishes that were classified as threatened, the use of the criteria was not evenly distributed. Seventy percent of the threatened fishes were classified using the A criterion (declining population), and almost all the rest (26%) were classified using the D2 criterion (very small area of occupancy). The vast majority (96%) of threatened fishes were classified using only one criterion. These results are in sharp contrast to the threatened birds, for which the majority were classified using multiple criteria, and with an almost even distribution of criteria used. The C criterion (small population size and decline) was the one most frequently used (Collar *et al.* 1994). There are two possible reasons for these differences. First, the biased use of a single criterion for marine fishes could also be attributed to a lack of suitable data to apply to the criteria. Second, some of the criteria may be more suitable for classifying marine organisms than others.

It is possible that criteria C and D1 (small population size and decline and very small population) are not applicable to marine fishes because they use such low thresholds of number of mature individuals. Such small numbers in marine fish populations do not seem to be prevalent, or if they exist, they are not widely known. Theoretically, criterion B (small distribution

and decline or fluctuation) should be applicable to marine fishes, but it relies on detailed knowledge of area of occupancy, especially at crucial life-history stages. More basic research is needed to fill this gap in our knowledge in order to make such evaluations possible.

The nature and quantity of the data available on global populations constrain the number of marine fishes that can be evaluated using the new classification system. Where there are data for marine fishes, they tend to fall into two major categories. First, a huge amount of population dynamics data is available for commercially fished species. This can be employed to evaluate species under criterion A (declining population). The problems with such cases are twofold. On one hand, fisheries data tend to come in stock-sized packages, which offer an incomplete and often irrelevant picture of the species as a whole. This precludes a global assessment, although distinct subpopulations can be evaluated and included in the Red List. In addition, although the widely used fisheries measure of CPUE (Catch Per Unit Effort) is often assumed to relate well to actual numbers of fishes, it may not, for a variety of reasons. Second, distribution data are available for very narrow range nearshore endemics, for example those that live around small oceanic islands. These ranges are small enough to classify as Vulnerable under the D2 criterion (very small or restricted range). Other data are available for species subject to trade for other reasons, such as seahorses for the traditional Chinese medicine market. As yet, it is still not clear whether the vast majority of fishes are well-known enough to be classified under the new system.

Marine fishes are facing threats from multiple sources -- fishing for food, the traditional Chinese medicine market, the aquarium trade, and habitat loss, to name a few. The reality of these threats is borne out in the number of species that so obviously classified as being threatened. This workshop has only scratched the surface -- a lot more work is needed in order to bring the picture of the health of the marine environment into focus. But much of this will depend upon basic biological information on species and their habitats becoming available. Our knowledge of many processes in the marine environment is still rudimentary compared to even the most poorly studied terrestrial ones.

Recommendations for Future Management of Marine Fish Issues Within SSC/IUCN

Our third aim was to discuss the development of an effective SSC network for marine fishes. IUCN is increasingly being asked by its members to contribute to deliberations on sustainable fisheries. IUCN needs a network of experts to assist in providing the technical basis for such contributions. This process is already underway, and convening of the workshop was a major first step. Workshop participants are currently working together to produce a full set of guidelines, which should make life easier for scientists who will be evaluating the status of marine fishes in the future. These guidelines will also outline recommendations for future revisions of the IUCN threat classification system. The panel consist of: Callum Roberts (University of York), Amanda Vincent (University of Oxford), Heather Hall (Zoological Society of London), Yvonne Sadovy (University of Hong Kong), Carl Safina (National Audubon Society), Andre Punt (CSIRO Division of Fisheries), Jack Sobel (Center for Marine Conservation), Georgina Mace (Zoological Society of London), Jonathan Baillie (IUCN), Elodie Hudson (Zoological Society of London), and Amie Bräutigam (IUCN). The guidelines will cover issues that are not exclusive to marine fishes, or even to marine organisms, and so may also help evaluators assessing taxa other than marine fishes.

Copies of the workshop report and the latest draft of the guidelines are available from Elodie Hudson, Institute of Zoology, Zoological Society of London, Regent's Park, London NW1 4RY. E-mail e.hudson@ucl.ac.uk.

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Sturgeon Specialist Group

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Created in 1994, the Sturgeon Specialist Group (SSG) is chaired by Vadim Birstein. At present, Dr. Birstein is a visiting scientist at the American Museum of Natural History (New York, NY, U.S.A.) and Director of Scientific Programs of The Sturgeon Society, a New York-based not-for-profit organization. Sturgeons are anadromous or freshwater fishes inhabiting the entire northern hemisphere. There are 25 extant sturgeon species (17 species living in Eurasia and eight inhabiting North America) and two paddlefish species living in the United States and China. All of the species are threatened and need the urgent attention of the scientific community.

The SSG membership includes 21 scientists from France, Germany, Italy, Romania, Russia, Spain, and the United States. The main goal of the SSG during the last triennium was to collect data for the Action Plan: gathering and analyzing recent scientific papers, materials published in the mass media, and information received from local scientists and caviar dealers. The Action Plan will also include an analysis of recovery plans being conducted in the United States and conservation projects underway in Western Europe.

At present, the demand of the international caviar market stimulates uncontrolled over-fishing and poaching of the main commercial species in the Volga River-Caspian Sea basin (the beluga, *Huso huso*, Russian sturgeon *Acipenser gueldenstaedti*, and stellate sturgeon, *A. stellatus*) and in the Russian Far East and China (the kaluga, *Huso dauricus*, and the Amur River sturgeon, *A. schrencki*). Beluga is the most vulnerable to overfishing. Due to dam construction, it has lost almost all of its natural spawning sites and during the last few years beluga has not been restocked artificially in Russia due to a lack of wild breeders. The decrease in commercial sturgeon species has increased the harvest of species before which had not been caught commercially for caviar (such as the Siberian sturgeon, *A. baerii*).

To collect information on the contemporary status of commercial sturgeon species, Dr. Birstein visited the main sturgeon facilities in Russia (the city of Astrakhan in the Volga River Delta, and the city of Krasnodar, the Kuban River) and Romania (the cities of Tulcea and Galati in the Danube River Delta). A member of the SSG, Dr. Georgii Ruban (Moscow), organized a 1995 expedition (funded by the Sturgeon Society) to Siberia and reported that the Siberian sturgeon, *A. baerii*, is extremely threatened by poaching in the Ob River basin.

Also, two expeditions to the Amu Darya River (Central Asia) for the evaluation of the status of the two other endemics of that area, the large Amu-Dar shovelnose sturgeon (*Pseudoscaphirhynchus kaufmanni*) and the small Amu-Dar shovelnose sturgeon (*P. hermanni*), were organized by Dr. Birstein in 1996 and funded by The Sturgeon Society. Expeditions were headed by Dr. Vladimir Salnikov (Institute of Zoology, Ashgabad, Turkmenistan). Results of the expeditions showed that *P. hermanni* should be considered as Critically Endangered, but not Extinct, and *P. kaufmanni*, as Endangered. Unfortunately, the drying out of the Aral Sea as a result of poorly planned water distribution for cotton agriculture and the uncontrolled use of pesticides during the last decades of the Soviet Union caused the extinction of the Aral Sea population of the ship sturgeon, *Acipenser nudiiventris*, and of the Syr-Dar shovelnose sturgeon, *Pseudoscaphirhynchus fedtshchenkoi*.

As a result of the status evaluation of all sturgeon and paddlefish species according to the new categories of IUCN, recommendations for the 1996 IUCN Red List of threatened Animals (attended by Dr. Birstein) were submitted by the SSG. The evaluation was discussed and approved at the workshop on marine fishes and the IUCN Red List categories held in collaboration with WWF and IUCN at the Zoological Society of London in April-May, 1996.

Additionally, several SSG members took part in international conservation actions. Dr. Benigno Elvira (University of Madrid, Spain), is a co-organizer of a new European association, Society to Save the Sturgeon. The Society's goal is to restore *Acipenser sturio* in Western Europe. Dr. Steve Mims (Kentucky State University, Frankfort, Kentucky, U.S.A.) visited China several times for negotiations with the Chinese authorities on a breeding program for the Chinese

paddlefish, *Psephurus gladius*. Dr. Birstein chaired the workshop Sturgeon Stocks and Caviar Trade, October 1995, in Bonn, Germany. It was organized and funded by the German Federal Ministry for the environment, Nature Conservation, and Nuclear Safety. Two Russian SSG members, Drs. Evgenii Artyukhin (St. Petersburg) and Victor Svirsky (Vladivostok), gave talks at the workshop.

Also, a molecular method for caviar species identification was elaborated by Dr. Birstein in collaboration with Dr. Rob DeSalle of the American Museum of Natural History (Nature, 16 May, 1996). It is hoped that this method will be put to use by governmental authorities to control the importation of endangered species. Dr. Birstein is presently working with Dr. Nicholas Robinson of the Pace University Environmental Law Center (White Plains, New York) to write draft New York State legislation to require this kind of testing.

The SSG has been in close contact with the TRAFFIC International (Ms. Teresa Mulliken, Cambridge), TRAFFIC Europe (Mr. Tom De Meulenaer, Brussels), TRAFFIC Russia (Mr. Alexey Vaisman, Moscow), the World Conservation Monitoring Centre (Mr. Neil Cox), as well as the other branches of the IUCN (Dr. Alison Rosser, Wildlife Trade Program, Cambridge; Ms. Amie Bräutigam, SSC, Washington) sharing information on sturgeon status with them. Also, Dr. Birstein prepared a preliminary draft of proposals for the CITES listing of sturgeons. Concerning the CITES listing, he is in contact with the German Authority to CITES (Dr. Rainer Blanke), CITES Animals Committee (Dr. Hank Jenkins), and the IUCN Commission on Environmental Law (Prof. Nicholas Robinson).

Together with The Sturgeon Society, the SSG publishes The Sturgeon Quarterly which includes abstracts of all published scientific papers on sturgeons, original papers, reports on sturgeon meetings and workshops, and news.

Notebook

**This section is devoted to notes of interest to the aquatic conservation community.
If you have an important fact, observation or theory to report, but never seem to have the time
to write a letter or an article, just send along a short note, or an email.
It takes only a minute or two to spread the word. ds**

◆ Association of Aquarists

The Association of Aquarists (U.K.) is seeking to improve its links with other organizations in various fields:

- with a view to keeping abreast of events in the aquatic world;
- to share and increase captive stock supplies of endangered fish and those carrying an import ban, sharing the knowledge of where such fish may be obtained;
- to share and spread knowledge and expertise;
- to institute magazine exchanges and some article duplication;
- to work together for the common purpose of improving the profile and popularity of the hobby.

Any responses can be directed to: Association of Aquarists, 5 Napoleon Drive, Basingstoke, Hants, U.K. RG23 8DW, Tel: 01256 53793

◆ Atlantic Coastal Zone Database Directory

The Atlantic Coastal Zone Information Steering Committee (ACZISC) is pleased to announce the availability of Version 3 of the Atlantic Coastal Zone Database Directory on the WWW. The Directory is available, in a searchable format, via the ACZISC homepage which is located at <http://is.dal.ca/aczisc/aczisc>.

The Database Directory lists and describes 608 databases of relevance to the integrated management of the coastal zone of Atlantic Canada. The majority of the databases described in the Directory are geographically-referenced.

Also available through the ACZISC Homepage is an Inventory of Atlantic Coastal Mapping Projects, currently under development. The Inventory describes coastal mapping projects extant or currently under way in Atlantic Canada.

Feedback from users and suggestions regarding databases and projects which should be described in the Database Directory or the Inventory would be appreciated. Please forward comments to the ACZISC Secretariat to the attention of:

Claudette LeBlanc
Chair, ACZISC Database
Directory Working Group
Oceans Institute of Canada
1226 LeMarchant Street
Halifax, NS B3H 3P7 CANADA
Tel 902-494-3879
Fax 902-494-1334
Email leblancc@fox.nstn.ca

◆ South Carolina Aquarium

The South Carolina Aquarium is currently under construction and is scheduled to open in late 1998 or early 1999. It will be a 95,000 square foot facility that will interpret the diverse aquatic habitats of South Carolina, from the hills and forests to the open ocean. More information on the Aquarium can be found at www.awod.com/scauarium.

Chris Andrews has recently accepted the position of Executive Director at the South Carolina Aquarium in Charleston, South Carolina.

◆ Listing of Umpqua River Cutthroat Trout

The National Marine Fisheries Service (NMFS) has determined that the Umpqua River Cutthroat Trout (*Oncorhynchus clarki clarki*) is a "species" as defined by the Endangered Species Act (ESA) and as such has listed it as endangered. Observers have counted extremely low and declining numbers of the fish at Winchester Dam on the North Umpqua River in Oregon. The species has been decreasing due to habitat degradation, recreational fishing and inadequate regulatory mechanisms. For a copy of this rule, please contact Jocelyn Ziemian, AZA Government Affairs (301) 907-7777 or AZAga@aol.com.

Notebook (continued)

◆ **Coral Reef Conservation Program Initiated**

Reprinted from *Communiqué*, November 1996

Recognizing both the critical state of coral reefs and their importance to the planet, the National Aquarium in Baltimore created a holistic coral reef conservation program, Project ReefAction, to raise public awareness of the importance and plight of coral reefs and to provide opportunities for involvement and action. In April 1995, the first marine conservation meter was installed at the aquarium to help raise funds for the marine reserve, Parque Nacional del Este in the Dominican Republic. In addition to the financial support, the aquarium has been involved in creating Spanish and English brochures for distribution in local dive shops near the marine reserve and in working with Dominican Republic officials in establishing appropriate management protocols for the reserve. Additional *in situ* activities involve supporting reef monitoring programs in the Caribbean, such as Project Reef Spawn and the Caribbean Coastal Marine Monitoring network. AZA awarded the aquarium with this year's "Significant Achievement Award" for Project ReefAction.

In conjunction with the International Year of the Reef campaign, the aquarium has organized a Coral Reef Forum at the National Press Club in Washington, D.C. for 20 November. For this, the aquarium has organized two panels to discuss the science of coral reefs and how the public can become involved in coral reef conservation, education, and action. Science writers and journalists from all over the United States have been invited to listen to presentations and ask questions at these morning panel discussions. Reg Murphy, President and CEO of the National Geographic Society, will speak on coral reefs at the National Press Club Luncheon that day.

K. Morris-Zarneke

◆ **Database Ichthyological Nomenclature**

The Calypso Ichthyological Database, which is the base used for all Calypso's ichthyological publications and taxonomic checklists is currently in the process of being updated. This updating will eventually affect all Calypso Publications' productions. (All taxonomic material for use in disc production has already been updated.)

Most of the changes to be implemented affect the "Family" sequencing within existing published works and very few changes indeed will have to be made to the information on generic and specific naming of individual species – such changes as are required in this latter area are made on a continuous daily basis and have almost all already been incorporated into existing publications. At levels above Family: some families will now be shown in new or differing Orders to those on the original database. This again reflects the availability of newer and hopefully more accurate information.

No changes in any way affect the species numbering system or its area codes. No changes affect other areas of information on each species stored in the main database. All taxonomic sequences shown in all publications published after January 1st 1997 will use the new sequences.

Full, new taxonomic sequencing lists will shortly be available to all of our previous customers concerning the areas to which their original purchase was applicable. These will all be provided free-of-charge as part of the updating service which is an integral unit within the original purchase.

New taxonomic sequence listings for all database areas currently covered are expected to be available by June 1997.

Notebook (continued)

◆ DFO Releases Discussion Paper on Marine Protected Areas

The Department of Fisheries and Oceans released a discussion paper February 13, 1997 that will give Canadians an opportunity to provide input and comment on the Department's proposed approach to establishing Marine Protected Areas (MPAs).

The 46-page discussion paper, titled *An Approach to the Establishment and Management of Marine Protected Areas*, was sent to 1,500 interested stakeholders. It is available to the public through the department's offices across the country and in the publications section of the DFO internet Homepage (<http://www.ncr.dfo.ca>).

The development of an approach to the establishment of MPAs is the first major initiative to be launched under the *Oceans Act*, which came into force on January 31, 1997. The Act provides for the creation of MPAs as part of a national oceans management strategy based on the sustainable development and integrated management of oceans, their resources and the coastal activities that affect them.

The primary objective of the Discussion Paper is to provide a general overview of what MPAs are, describe the elements of MPAs that are provided for under the *Oceans Act*, and to initiate discussion with all Canadians on how DFO should use this management tool to help protect our ecosystems.

Following the release of the MPA Discussion Paper, there will be a ninety-day public review period. During this review period, Information Sessions will be held in major regional centres to further solicit input into the review process. The exact dates and locations of these sessions will be determined by public interest. The regional offices of DFO will be coordinating the sessions, and will be providing additional information. DFO officials would be pleased to discuss this initiative with you, at these sessions and any time during this review period.

William A. Rowat
Fisheries and Oceans

◆ Spring Nevada TFE/BAKA Conservation Trip Report

I arrange two trips per year to southern Nevada for Tropical FishKeepers Exchange and the Bay Area Killifish Association (both are based in California) to undertake conservation work on threatened and endangered fish populations under the direction of Nevada Division of Wildlife biologist Jim Heinrich. The following is the report on our latest trip.

March 14-16 was our conservation weekend in southern Nevada. Unfortunately, turn up was very poor, with only three bodies present at our rendezvous. Despite this it was quite a successful and productive trip. First stop was the Virgin River at Mesquite where we were monitoring reintroduced Endangered woundfin (*Plagopterus argentissimus*) populations. Native fish were not very common, a few flannelmouth suckers (*Catostomus latipinnis*), desert suckers (*Pantosteus clarki*), 2 Endangered Virgin chubs (*Gila seminuda*), 1 speckled dace (*Rhinichthys osculus*), and around 20 woundfin. Exotics included one carp (*Cyprinus carpio*) and literally thousands of red shiners (*Cyprinella lutrensis*). Next day we headed to a local park for some hard labor adding rocks to a half mile of artificial stream being developed for native fish conservation in Boulder City. Thanks to Jim Heinrich for allowing us to contribute.

From here we headed to Ash Meadows for a day and a half. We removed all the encroaching reeds (*Typha*) from two springs to try to open up Threatened pupfish (*Cyprinodon nevadensis mionectes*) habitat and reduce habitat for the exotic species there. We also removed around a thousand exotic fish (sailfin molly and dammbusia), crayfish, and bullfrogs. During a 6 month project there I have removed over 8000 exotics in 5-6 trips. Pupfish numbers appear to be improving, especially juveniles. Of course, one needs to keep removing exotics for the effect to continue. All collecting was done in conjunction with USFWS staff on the refuge. We also collected many shortfin molly and convict cichlids (including albinos) from Roger's

Notebook (continued)

Springs by Lake Mead, one of the other sites I am studying.

Unfortunately it is often difficult to give sufficient notice in Aquatic Survival of specific trip details. Everyone is welcome to join in, if interested you should feel free to contact me ahead of time and I will provide you with trip details. We usually have two trips per annum to southern Nevada, one in spring, the other in autumn. I strongly encourage folks to get involved. Hopefully we will see a few more faces (including some new ones) on our next conservation trip this autumn.

Cheers,

Peter Unmack
PO Box 1454
Tempe AZ 85280
peter.unmack@asu.edu

Electronic ACN

**Aquatic Survival:
editor@acn.ca**

Web Page: www.acn.ca

General Inquiries: rob@acn.ca

Coming Events

Further details for some of these events can be found on the ACN World Wide Web Pages via our home page at <http://www.acn.ca>

Future Marine Food Technologies

The Marine Biological Laboratory (MBL) in Woods Hole, Massachusetts, will host its third annual symposium in marine biotechnology on **Monday, May 5, 1997**. This symposium, designed to provide scientific and technical insights into the exciting area of future marine food technologies, will be a one-day event set at the MBL, the oldest private marine laboratory in the United States.

The speakers represent a wide range of expertise and experience and have selected their topics and designed their talks to appeal to scientists, business leaders, investors, and policy makers. A great deal has been written about the potential applications of marine biology and the field of marine biotechnology, but few meetings have addressed these areas specifically.

This symposium, the third in a series at the MBL, will enable the participant to get a clear picture of the scientific breakthroughs, as well as the potential applications of research in marine biology and biotechnology in the area of food production and protection.

The one-day symposium will include a full day of talks, each of which will be followed by a question and answer period.

The registration fee of \$125 covers the cost of the meeting, including a lunch and coffee breaks. Accommodations are available on the MBL campus and in the surrounding environs of Woods Hole and Falmouth. The cost of MBL housing is \$54 per night per room. Please contact the MBL Housing Office directly to make reservations (508-289-7213). For those arriving on Sunday, a dinner will be held that evening in the MBL's Swope Center. The dinner is an additional \$25 per person.

For further information or a registration form, please call the MBL's Office of Communications at (508) 289-7423 or E-mail <comm@mbl.edu>.

Coming Events cont'd

TROPICAL FISH BIOLOGY 1998 International Symposium, Southampton, England, 13-16 July 1998

The Symposium Convenors:

Dr. George F. Turner, University of Southampton
Prof. Gary R. Carvalho, University of Hull

Organising Committee:

Terry Langford, Rosemary Lowe-McConnell,
Nicholas Polunin, Anne Magurran and Rosanna
Robinson

AIMS & SCOPE

The symposium will consider all aspects of tropical fish biology, conservation and exploitation, with the aim of drawing upon the strengths of different disciplines to tackle common questions.

TOPICS

The following are suggestions for possible topics though any papers on the general theme will be considered by the Organising Committee. Fishes and Ecosystems; Population and Conservation Genetics; Evolution and Speciation; Conservation & Resource Management; Behaviour. Keynote speakers confirmed so far are Prof. John Beddington (MRAG, London), Prof. Axel Meyer (SUNY, New York), Prof Daniel Pauly (UBC, Vancouver), Prof. Robert Vrijenhoek (Rutgers, New Brunswick), Dr. V. Christensen (ICLARM, Denmark), Prof. R.R. Warner (Santa Barbara, USA). If there is sufficient interest, we may hold a workshop on the theme of African freshwater fisheries and conservation on Friday 17th July.

COSTS

Every effort will be made to keep the costs to a minimum. Registration fees will be in the order of £70, with reduced rates for students. Financial assistance will be available for some students and delegates from developing countries. Enquiries, stating circumstances, should be addressed to the committee.

LOCATION

The conference will be held at the University of Southampton on the south coast of England. Rich in heritage, the Medieval walled city of Southampton has played a significant role in maritime history through

the ages and remains a premier international port. The university reflects the city's relationship with the sea. The Southampton Oceanography Centre, Europe's leading centre for the study of marine & earth sciences, is a joint project between the University and the Natural Environment Research Council. Three research ships are berthed alongside the centre, which was officially opened in April 1996.

TRAVEL

Southampton Airport is just 15 minutes from the Conference Hall and has numerous flights from London and other major European cities. The city of London and the major international airports of Heathrow and Gatwick are just over one hour away by train or car. Visitors to the UK may enjoy more economical and scenic bus and rail journeys from London with cheap student fares available. Twice daily ferry services to Southampton are also available from France.

ACCOMMODATION

Accommodation will be provided in a University of Southampton Hall of Residence where bed and breakfast will cost from about £25 to £35 according to facilities required.

CONTRIBUTIONS

Abstracts should be submitted no later than Friday **14 November 1997**. All abstracts will be reviewed by the Organising Committee and accepted on their merit and relevance to the topic. The refereed proceedings will be published as a supplement to the Journal of Fish Biology within six months of the Symposium. Potential delegates are asked to indicate their interest and willingness to present a paper or a poster and if they are interested in attending the workshop on African freshwater fishes. To receive further details of the Symposium, registration forms and guidelines for the preparation of abstracts, or for any other enquiries regarding the symposium contact:

Dr. George F. Turner (FSBI Symposium Organiser)
Biodiversity & Ecology Division, School of Biological
Sciences University of Southampton Bassett Crescent
East Southampton England, SO16 7PX Telephone:
01703 594394 Fax: 01703 594269/594793 E-mail:
GFT@SOTON.AC.UK

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976 Alder Avenue
Sherwood Park AB T8A 1V6 CANADA

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See registration information on the previous page.

