



NEWSLETTER

of the Introduced Fish Section  
American Fisheries Society

August 1995

Don Baltz, Editor

Volume 14, Number 2

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PRESIDENT'S CORNER

In the interest of keeping this newsletter short and timely, I will reserve my comments for a send off message in the following Newsletter. The results of the recent IFS election of officers will be announced at the IFS Meeting in Tampa, so folks who have not yet mailed in their ballots should do so ASAP. They can be FAXED to me at (503) 231-6243, right up to the day of the Tampa meeting. See you in Tampa!

FROM THE EDITOR

Good News for those of you over 40. I finally read a newsletter in the final (i.e., reduced) form and suffered severe eye strain; therefore, you will notice that the font size has been increased slightly.

The wide range of views expressed/shared in the items in the IFS Newsletter are all FYI and do not, unless otherwise noted, constitute any IFS or AFS concurrence with the comments made or positions taken therein.

Thanks again to those of you who have sent in materials for the newsletter. I am always looking for contributions, so keep the newsletter in mind when you see an item that might be of interest to IFS. You can submit items by FAX, e-mail, or snail-mail. See addresses at end of newsletter. I also welcome your comments on the content and coverage newsletter, tips on information sources, abstracts of your papers *in press*, and items of interest.

IFS MEETING IN TAMPA '95

The Introduced Fish Section meeting in Tampa is set for 4:30-5:30 PM, Sunday, August 27th in the Hyatt Hotel following the Society EXCOM meeting (which runs through 3:30 PM). Please plan to attend if at all possible.

Two items of particular interest at the IFS Business Meeting will be the announcement of election results (and passing of the gavel) and a discussion by John Cassani on the options/cost for publication of the text "Managing Aquatic Vegetation With Grass Carp." Per the vote at the 1993 Business Meeting, this book is an official IFS project and we need to decide how to proceed to publication.

Unfortunately, though there was strong interest by the Conservation and Science Division of the American Zoo and Aquarium Association, the special session on the use of nonindigenous species in the aquarium industry did not come together. Perhaps we can work this one out for a future meeting. The IFS will also be participating in the poster session with a showing of the "award winning video" recently completed by the Agricultural Extension Service. The poster session this year will focus on the contributed posters and the activities of the Sections. It should be an excellent recruiting opportunity!

CORRESPONDENCE

Newt Endorses AFS Protocol.....Correspondent: Denny Lassuy

Well sorta! From the Greenwire - "Taking questions from a panel of young people in an MTV special, House Speaker Newt Gingrich (R-GA) conceded the environment is an issue that crosses borders (emphasis added - Ed): 'I think it's perfectly reasonable for us to say to Illinois, you will have your water at this quality before it goes into Missouri.'" See - there is hope - even Newt apparently recognizes that things don't always stay where we put them and, as importantly, actions taken in one state that can impact the waters of another state (including their biological integrity, I presume) are valid concerns of the "receiving" state. Sounds pretty close to an endorsement of the AFS Introduced Species Protocol!

Whirling Disease.....Correspondent: Denny Lassuy

Another item from the Greenwire - "Detailed study of whirling disease released"- A recently released report by Colorado Division of Wildlife researchers contains the most detailed studies ever conducted on whirling disease and its link to the deaths of wild rainbow and brown trout in the Colorado River. The report

concluded that whirling disease, which attacks the cartilage of young fish and hinders their ability to swim, may not be the only cause of death. Gas bubble disease, external parasites, bacteria and fungal disease could also be to blame. Whirling disease was introduced to Colorado by a private hatchery release in 1987. Researchers expect that it will take years of research before the disease is fully understood.

*Symphysodon* in Surinam.....Correspondent: Editor

This story concerning exotics was picked up on the internet. It reveals conditions in the aquarium trade, the destruction of native stocks, and the all too familiar story of greed, man, and fishes. It also reflects the complexity of conservation issues. Most importantly it highlights the need for a code of ethics in the aquarium trade [Ed]:

Date: Sun, 18 Jun 1995 19:30:05 +0200

From: Sven O Kullander <ve-sven@NRM.SE>

To: Multiple recipients of list CICHLID-L <CICHLID-L@FREESIDE.NRM.SE>

Subject: Re: SOUTH AMERICA: *Symphysodon* in Surinam

The June 1995 issue of *Aquatic Survival* (Bulletin of the Aquatic Conservation Network) reprints some of the discussion run on cichlid-l, nia-net, discus-l and CompuServe's FishNet concerning the translocation of \**Symphysodon*\* from Florida to Surinam.

One of the comments, by Dr. Labbish Chao, did not appear in the electronic discussion lists, but is original with *Aquatic Survival*. I reproduce it here in full, as it is an important commentary contrasting with the views expressed by aquarium business people. Reproduction is sanctioned by the impressum of *Aquatic Survival* ("Unless otherwise indicated, articles can be reprinted without permission provided that such use is not for financial gain and appropriate credit is given to the author and to *Aquatic Survival*"). *Aquatic Survival* can be contacted at [ag508@firenet.carleton.ca](mailto:ag508@firenet.carleton.ca). The text was scanned, and the author's boldface emphasis is reproduced here in capitals, his italicized text delimited by \*.

Dr. Chao's reproduced text follows [Ed]:

#### Bio-Amazonia Conservation International

Recently, I have read and been asked about the questions concerning the wild caught ornamental fishes and high mortality rate during shipment, especially about cardinal tetra. Several articles have also declared that high mortality rate and over fishing have caused the commercial extinction of cardinal tetra from mid-Rio Negro basin. IT IS NOT TRUE AND NONE OF THE AUTHORS HAS provided data for their assertions. Since 1989, our project "Piaba" team has studied fish diversity and their conservation in the region (\**Aquatic Survival*\*, March 1994). There is a decline of fishes sold per fisher, due to increasing number of new fishers. The export statistics of cardinal tetra from the last 30 years have remained stable, between 10 and 15 million per year. The export of wild caught silver dollars, pencil fishes and angel fishes has drastically reduced. On the other hand, plecos and corydoras have increased more than tenfold. Many other exotic, such as freshwater stingray and arowana are illegally exported from Brazil. These changes show that hobbyists have changed their "fevers" and aquarists have been successful to breed many species of wild fishes.

Dr. David Sands recently reviewed the question of wild caught fish and their future (\**Aquatic Survival*\*, March 1995). He has clearly pointed out that the high mortality rate of wild caught fish is due to lack of proper care and handling. I love

Dr. Sands' "ideal world" for fish catchers and fishes. I also looked at the other scenario, if the future for wild caught ornamental fish ended. There are individuals and organisations promoting the total ban of wild fish. Many aquarists are helping the "ban" by successfully breeding and making money from "new" varieties of wild fish. A "ban" will take away the livelihood of thousands of riverine people, who may in turn opt to slash-and-burn marginal agriculture (deforestation), hunt other threatened wildlife or move to city slums. The environmental and social costs will be much greater than the revenue from ornamental fishes (3 million US dollars annually).

Aquarists often come to collect in South America without a permit, that's illegal. Some have described new species without locality nor following the code of International Zoological Nomenclature. The worst example of an aquarist's ego appeared in a recent article in \*Diskus Brief\*. Mr. Jack Wattlely, a very successful discus breeder, reported that he had introduced his hatchery bred discus to southeast Suriname, where a Dutchman has already introduced the swamp area with cardinal tetra. Mr. Wattlely also wrote that "if my discus TAKE HOLD and EVENTUALLY propagate, one can be ensured that in years to come the only discus found in Suriname will be \*Wattlely Coeruleas\*." Mr. Wattlely has openly declared his "ecological crime" with pride! The environmental damages caused by exotic fishes to local aquatic systems has been well-documented. Most tropical countries have laws to control exotic fishes; I doubt that Surinam, "truly a third-world country", has no law to prohibit introduction of exotic fish. This law is enforced in Brazil.

We cannot dismiss the fact that aquarists (including fish farmers) are responsible for releasing exotic tropical fishes in southern Florida, where many tropical fishes have HELD and the Oscar, a predator of native fishes, has become the second most captured sport fish. I have met many aquarists/ hobbyists in the Amazon, some came to support our project and to visit natural habitats of their aquarium fishes. Some believe in conservation of wild fish and have made continuous efforts to support our project. Other enthusiasts have made a great effort to collect and purchase fishes for profit and greed (owning fishes nobody else has): one smuggled turtle eggs, one tried to sell fish to others even in the field, one wanted to sell driftwood, one was eager to buy ornaments made from wildlife body parts, etc. Sure, it takes all kinds to make a hobby.

An environmental ethic is definitely lacking in the ornamental fish industry: fishers, traders, aquarists and hobbyists. Wild ornamental fish have been harvested as a free natural resource up for grabbing, like the ocean fishery. If the industry and those involved were continuing to ignore the care of wild fish in captivity, or not making an effort to preserve their natural habitats, we will not have a future for wild ornamental fish. If the ornamental fishery were stopped in Amazon, I expect that deforestation will be intensified in some regions and the socio-economic-cultural costs to riverine people will be disastrous.

Sincerely Yours,  
Ning Labbish Chao

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**Water Weeds.....Correspondent: Denny Lassuy**

Invasion of the Water Weed – This was the headline to an excellent article by reporter James Wise in the Oregonian newspaper on July 22, 1995. The "water weed" is hydrilla and the article is based primarily on an interview with Dr. Mark Systma of Portland State University. It recounts the spread of hydrilla in California and Washington and provides a telephone number for the Oregon Department of Agriculture for help in identifying hydrilla. Though Dr. Systma is quoted as noting that hydrilla has not been reported in Oregon yet, he says he "would be very surprised if it's not already here." Hydrilla "hot spot" maps are accompanied by photos or illustrations of *Hydrilla*, *Elodea*, and *Egeria* along with schematic drawings of natural and hydrilla-infested aquatic habitats. The article explains the biology of the species, the biology of invasions, and identifies and discusses sources of hydrilla introduction such as recreational boats, aquarium dumps, and aquatic garden supplies. Wise describes "early detection and subsequent diligence" as the key to control and presents the utility and drawbacks of several control methods including lake draining, sterile grass carp, and herbicides. Wise also notes Dr. Systma's concern that "the public largely is unaware of the dangers of exotic species." Dr. Systma is absolutely right – but with excellent outreach like this, again there is hope!

**Fish News ..... Correspondent: Gene Buck**

[Gene Buck is a Senior Analyst for the Congressional Research Service and publishes weekly summaries of fish related issues for Congress. His e-mail address is gbuck@crs.loc.gov. This is a selected subset of news items of potential IFS interest extracted from <FISH - ECOLOGY @SEARN.SUNSET.SE> with Gene Buck's permission. Gene is always looking for new fisheries issues to communicate to Members of Congress and their staff. *Editor*]

**NMFS FY1996 Budget.** On July 26, 1995, the House passed H.R. 2076, FY1996 appropriations for the Dept. of Commerce (including the National Marine Fisheries Service). The FY1996 NMFS budget, as agreed to by the House, totaled about \$251 million, less than the \$315.8 million requested by the Administration and less than the \$268.6 million received for FY1995. [Congressional Record, H.Rept. 104-196]

**Native Gulf White Shrimp Vulnerable.** In early July 1995, Texas Dept. of Parks and Wildlife officials announced new information indicating that native white shrimp in the Gulf of Mexico can be infected by the Taura syndrome, contrary to earlier assurances that native Gulf of Mexico shrimp would not be affected. Taura syndrome was responsible for decimating Asian white shrimp grown at South Texas aquaculture facilities earlier this year. Results of tests on native Gulf pink and brown shrimp are incomplete. [Assoc Press].

**Altamaha River Catfish.** In late July 1995, Georgia biologists began an electrofishing program to remove as much as five tons of illegally stocked flathead catfish from the upper Altamaha River. The harvested fish are being processed by the State prison system and donated to a food bank. [Assoc Press]

**Aquatic Nuisance Species Digest..... Correspondent: Editor**

The ANS Digest is a new publication of the Freshwater Foundation that provides current information on monitoring and controlling the spread of nonindigenous species. Its birth was prompted by The Aquatic Nuisance Prevention Act of 1990 which directed the ANS Task Force to oversee public dissemination of information about ANS issues. Articles in the first issue include... "An Historical Perspective on Invasions of North American Waters by Nonindigenous Species", "Nonindigenous Aquatic Weeds: A National Problem", "State Management Plans on Aquatic Nuisance Species: Setting the Stage for Implementation", "The Cost of Zebra Mussel Monitoring and Control", "Edible Brown Mussels in Coastal Waters of Texas", and "The National Biological Information Infrastructure, Part 1". Contact: Nils C. Halker, Editor, ANS Digest, Freshwater Foundation, 725 County Road Six, Wayzata, MN 55391. Phone (612) 449-0092, e-mail frshwtr@freshwater.org

**Risk Assessment and Management .....Correspondent: Denny Lassuy**

The Risk Assessment and Management (RAM) Committee, a subunit of the Task Force established under the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990, has recently released its DRAFT Proposed "Generic Nonindigenous Aquatic Organisms Risk Analysis Review Process." The stated objective of the draft report is to provide a standardized, yet flexible, approach to estimating risk associated with the introduction of nonindigenous aquatic organisms and how to manage that risk. A copy of the draft report has been forwarded to IFS for review and comment. If individuals would also like to review the draft report, you can contact Dr. Richard Orr (RAM Committee Chairman) at USDA Animal and Plant Health Inspection Service, 4700 River Road, Unit 117 Room 3-C-38, Riverdale, MD 20737-1228. Comments are due back to Dr. Orr by September 15th.

**Green crabs and other species.....Correspondent: James T. Carlton**

The *Carcinus*-in-SF Bay story was published in the last issue or two of *Marine Biology*: Introduction, dispersal and potential impacts of the green crab *Carcinus maenas* in San Francisco Bay, California. 1995. Andrew N. Cohen, J. T. Carlton, and Monique C. Fountain. *Marine Biology* 122: 225-237.

In the same issue are three additional invasion papers by Ted Grosholz and Greg Ruiz (see *Have You Seen ...? [Ed.]*) on the spread of *Carcinus* outside of San Francisco Bay, along the California coast and its ecological impact on the benthic infaunal community in Bodega Harbor; Claudia Mills on the invasion of two species of Sarmatic hydromedusae in San Francisco Bay; Terry Gosliner on the invasion of a carnivorous New Zealand seaslug in San Francisco Bay – sort of a special issue on marine biological invasions!

The green crab invasion on the Pacific coast is a very interesting story, and may well have implications for shellfish fisheries and finfish fisheries (and certainly for the structure of benthic communities!). It has a tremendous potential to spread along the coast of Pacific America. Greg Ruiz (Smithsonian Environmental Research Center) and Ted Grosholz are tracking it along the California coast and are doing both distributional and community ecology work.

A few recent additional references on invasions:

1995. J. T. Carlton and J. Hodder. Biogeography and dispersal of coastal marine organisms: experimental studies on a replica of a 16th-century sailing vessel. *Marine Biology* 121: 721-730.

1995. J. T. Carlton. Exotic species update: are ballast water regulations working? *Focus* (International Joint Commission, Washington, D.C.), 20(1): 8-9.

1995. J. T. Carlton. Marine invasions and the preservation of coastal diversity. *Endangered Species Update* (School of Natural Resources, The University of Michigan), 12(4/5): 1-3.

And, finally, the large "Shipping Study" should be out and available from NTIS soon. This is the national study on the role of ballast water in mediating invertebrate, fish, and plant invasions in U.S. waters, and an outline of possible management and control measures: 1995. J. T. Carlton, Donald M. Reid, and Henry van Leeuwen. The role of shipping in the introduction of non-indigenous aquatic organisms to the coastal waters of the United States (other than the Great Lakes) and an analysis of control options. The National Biological Invasions Shipping Study (NABISS). United States Coast Guard and the National Sea Grant Program, 213 pp. + appendices.

#### HAVE YOU SEEN...?

**The spread and potential impact of the recently introduced European green crab, *Carcinus maenas*, in central California.** Edwin D. Grosholz and Gregory M. Ruiz. *Marine Biology* (1995) 122: 239-247.  
Abstract: Our study examines the potential impact of the European green crab *Carcinus maenas* on communities of coastal embayments of western North America. We document the current distribution and range extension of this species beyond San Francisco Bay, where *C. maenas* first became established along this coast in 1989-1990, and we test the effect of *C. maenas* predation on different species and sizes of infaunal invertebrates in laboratory and field experiments. In our samples from eight coastal locations in central California collected between June 1993 and May 1994, we found no green crabs at the two closest embayments south of San Francisco Bay and found the crabs in all four embayments sampled within 120 km north of San Francisco Bay, up to and including Bodega Harbor. *Carcinus maenas* were not present in samples from sites farther north. This northward range extension is apparently the result of larval recruitment by a single cohort, corresponding to the predominant northern transport of surface waters and the approximate distance water moves during larval green crab development. At Bodega Harbor, the current northern range limit, the *C. maenas* population is now well established and reproducing. Females and males became sexually mature within their first year at approximately 40 mm carapace width, molting approximately monthly from summer through fall, and females were ovigerous in late fall of their first year at approximately 50 mm. We expect larvae from this population to recruit locally and to the north, promoting episodic range extensions as new populations are established and reproduce. Enclosure experiments conducted

during the summer of 1993 at the intertidal sandflats of Bodega Harbor showed that *C. maenas* significantly reduced densities of the most abundant taxa including the bivalves *Tranennella tantilla* and *T. confusa*, cumacean *Cumella vulgaris*, amphipod *Corophium* sp. Furthermore, *C. maenas* selectively removed larger (>3mm) rather than smaller (<1mm) *Tranennella* spp. in both field and laboratory experiments. Based on the available data from this and other studies of green crabs, and our 10-year study of community dynamics at Bodega Harbor, we predict *C. maenas* will significantly alter community structure, ecological interactions, and evolutionary processes in embayments of western North America.

**Predicting the impact of introduced marine species: lessons from the multiple invasions of the European green crab.** Edwin D. Grosholz and Gregory Ruiz. MS. Biological Conservation (in press).

Abstract: We compared ecological characteristics of three spatially independent invasions of the European green crab, *Carcinus maenas*, to determine which characteristics were most consistent across invasions, and hence, would be most predictable in future invasions. For invasions in western North America (WNA), eastern North America (ENA), and South Africa (SAF), we compared five characteristics: 1) habitat usage, 2) diet preferences, 3) size of individuals, 4) rate of range expansion, and 5) demonstrated and potential impacts. We found that two characteristics, diet preference and ecological impact were relatively similar across the three invasions. Diet preference was particularly consistent with the rank order of taxa being virtually identical at the three sites. In contrast, habitat usage, individual size, and rate of range expansion were more variable. Differences in habitat usage and size were particularly evident in the WNA invasion, where *C. maenas* have failed to colonize protected and exposed rocky shores used elsewhere and have grown much larger than at other sites. We suggest that the degree of similarity of these characteristics across invasions provides a valuable measure of how predictable they will be in future invasions.

#### Other recent citations:

- Berg, S., E. Jeppesen, M. Sondergaard, E. Mortensen. 1994. Environmental Effects of Introducing Whitefish, *Coregonus lavaretus* (L), in Lake Ring. *Hydrobiologia* 276:71-79.
- Bonar, S. A., S. A. Vecht, C. R. Bennett, G. B. Pauley, G. L. Thomas. 1993. Capture of Grass Carp from Vegetated Lakes. *J Aquatic Plant Management* 31:168-174.
- Costapierce, B. A., J. Moreau, R. S. V. Pullin. 1993. New Introductions of Common Carp (*Cyprinus carpio* L.) and Their Impact on Indigenous Species in Sub-Saharan Africa. *Discovery and Innovation* 5(3):211-221.
- Kitano, S., S. Nakano, M. Inoue, K. Shimoda, S. Yamamoto. 1993. Feeding and Reproductive Ecology of Exotic Rainbow Trout *Oncorhynchus mykiss* in the Horonai Stream in Hokkaido, Northern Japan. *Bulletin of the Japanese Soc Sci Fisheries* 59(11):1837-1843, (Japanese).

- Kubecka, J. 1989. The Spreading of the German Carp, *Carassius auratus* (Linnaeus, 1758) in the middle Elbe River. *Muzeum a Soucasnost, Roztoky, ser. natur.* 3:43-50.
- Kuda, D. B., J. S. Griffith. 1993. Establishment of Shoshone Sculpin (*Cottus greeni*) in a Spring Inhabited by Mottled Sculpin (*C. bairdi*). *Great Basin Naturalist* 53(2):190-193.
- Locke, A., D. M. Reid, H. C. Vanleeuwen, W. G. Sprules, J. T. Carlton. 1993. Ballast Water Exchange as a Means of Controlling Dispersal of Freshwater Organisms by Ships. *Can J Fisheries & Aquatic Sciences* 50(10):2086-2093.
- Norse, E. A. (Editor). 1993. *Global Marine Biological Diversity: A strategy for building conservation into decision making.* Island Press, Washington, D.C. 383 pp. \$27.50. ISBN1-55963-256-9. [This book was recently reviewed by Les Kaufman in the June 1995 issue of *Conservation Biology* 9(3):696-698 - Ed].
- Ruiz, G. M. A. H. Hines, L. D. Smith, and J. T. Carlton. 1995. An Historical Perspective on Invasions of North American Waters by Nonindigenous Species. *Aquatic Nuisance Species Digest* 1(1):1&11.
- Trammell, M. A., E. P. Bergersen, P. J. Martinez. 1993. Evaluation of an Introduction of Colorado Squawfish in a Main Stem Impoundment on the White River, Colorado. *Southwestern Naturalist* 38(4):362-369.
- Wang, N., R. Eckmann. 1994. Distribution of Perch (*Perca fluviatilis* L) During Their 1st Year of Life in Lake Constance. *Hydrobiologia* 277(3):135-143.
- Wanink, H., K. Goudswaard. 1994. Effects of Nile Perch (*Lates niloticus*) Introduction into Lake Victoria, East Africa, on the Diet of Pied Kingfishers (*Ceryle rudis*). *Hydrobiologia* 280:367-376.
- Zapata, S. C., C. Granadolorencio. 1993. Age, Growth and Feeding of the Exotic Species *Lepomis gibbosus* in a Spanish Cooling Reservoir. *Archiv Fur Hydrobiol*:90(4 Suppl)561-573

#### MUSSEL WATCH

##### Meetings:

**Conservation and Management of Freshwater Mussels II: Initiatives for the Future.** October 16-18, 1995. The Embassy Suites Hotel, St. Louis, MO. Contact: Alan Buchanan, Missouri Dept. Of Conservation, (314) 882-9880.

**6th Annual Zebra Mussel and Other Aquatic Nuisance Species Conference,** March 3-7, 1996, Dearborn, MI. Contact: Elizabeth Muckle-Jeffs 1-800-868-8776.

##### Publications:

- Hushak, L. J., Y. Deng, and M. Dillon. 1995. The Cost of Zebra Mussel Monitoring and Control. *ANS Digest* 1(1):5&11.
- Scrota, T. D. And L. S. Jacks. 1995. Edible Brown Mussels in Coastal Waters of Texas. *ANS Digest* 1(1):6&10.

#### 1993-1995 IFS Officers

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