

12th

International Symposium

August 3 - 9, 1998
HAUS ST. ULRICH
Augsburg/Germany



INTERNATIONAL
ASSOCIATION OF ASTACOLOGY

Crayfish NEWS

Vol.20 No.3

May 1998

The official newsletter of the International Association of Astacology

CONSERVATION STATUS OF CANADIAN CRAYFISHES

by Premek Hamr

Following is a summary of a softcover booklet published by WWF Canada titled "Conservation Status of Canadian crayfishes". It is 85 pages long and deals with the distribution, life history, ecology and conservation status of the 11 species found in Canada. Taxonomic and pictorial keys for Canadian species are included as well as numerous illustrations and distribution maps.

The booklet updates the knowledge (and raises the profile) of crayfishes in Canada. Hopefully it will also result in the official listing of some of the species which are imperilled in their Canadian range.

In Canada there are presently 11 species of freshwater crayfishes belonging to two families: the Astacidae (genus *Pacifastacus*) and the Cambaridae (genus *Fallicambarus*, *Cambarus* and *Orconectes*).

Crayfish have been recorded from New Brunswick (2 species), Québec (6 species), Ontario (9 species), Manitoba (2 species), Saskatchewan (1 species), Alberta (1 species) and British Columbia (1 species and 3 subspecies). These species include representatives of various ecological groups including semi-terrestrial (obligate) burrowers, pond and slow water species as well as crayfishes adapted to living in rapids and waterfalls.

(continued on page 4)



*The burrowing *Orconectes propinqua* has been classified "Vulnerable" in Canada. Drawing by Premek Hamr.*



The International Association of Astacology (IAA), founded in Hirtztal, Austria in 1972, is dedicated to the study, conservation, and wise utilisation of freshwater crayfish. Any individual or firm interested in furthering the study of astacology is eligible for membership. Service to members include a quarterly newsletter, membership directory, bi-annual international symposia and publication of the journal *Freshwater Crayfish*.

Secretariat

The International Association of Astacology has a permanent secretariat managed by Jay Huner. The address is: IAA Secretariat, PO Box 44650, University of Southwestern Louisiana, Lafayette, Louisiana 70504, USA.

Tel: (+1 318) 4825239

Fax: (+1 318) 4825395

E-mail: jhuner@usl.edu

Officers:

• Paula Henttonen, President, Dept of Appl. Zoology & Vet. Med., University of Kuopio, PO Box 1627, FIN-70211 Kuopio, Finland.

E-mail: Paula.Henttonen@uku.fi

• David Rogers, President-elect, Department of Life Science, The University of Nottingham, Nottingham, England.

E-mail: pldr@pln1.life.nottingham.ac.uk

• Glen Whisson, Secretary/Newsletter editor, Aqua Research & Marketing Services, 29 Pine Terrace, Darlington, Western Australia 6070, Australia.

E-mail: twhisson@alpha2.curtin.edu.au

• Jostein Skurdal, Immediate Past-President, Eastern Norway Research Institute, PO Box 1066 Skurva, N-2691 Lillehammer, Norway

E-mail: jostein.skurdal@ostforsk.no

Statements and opinions expressed in *Crayfish News* are not necessarily those of the International Association of Astacology

News from the Secretariat

Membership

There have been approximately 180 renewals and 20 new memberships since January 1, 1998. About 150 members are late in paying their dues. If you have decided to drop your IAA membership, please contact the Secretariat. If you have paid your dues but your mailing label is not annotated with 98-00, one of several things has happened:

- IAA has not received your payment.
- IAA has received your payment but has not yet sent you receipt or your receipt was lost in the mail.

IAA sends receipts by first class mail within 2 weeks of receiving a payment.

Voluntary Page Charges

IAA received almost \$1,000 from authors who were able to pay voluntary page charges for papers published in *Freshwater Crayfish 11*. This helped very much in defraying printing costs for *Freshwater Crayfish 11*. IAA 11 coordinator Walter Mornot sent approximately \$1,875 from excess funds collected for the symposium.

Sales of Freshwater Crayfish Volumes

The Secretariat has a reasonably large stock of Freshwater Crayfish volumes 8, 9, 10, and 11 (75-200 books). These do no one any good in storage. Please consider purchasing copies or encouraging your employers/institutions to purchase copies. With a valuation of \$25 each, IAA has a significant amount of cash tied up in the books. We wish to make this point because, in the past, IAA was criticized for not having books available for interested astacologists. Now, however, there do not seem to be all that many interested astacologists to purchase the books. Converting the books into cash can help IAA to help all members with endeavors such as regional meetings and, perhaps, travel funds.

GLOBAL AQUACULTURE ALLIANCE

Mr George Chamberlain, organizer of the Global Aquaculture Alliance, hosted a luncheon at the Aquaculture Las Vegas 98 meeting in February of this year. The GAA was organized to provide a communication vehicle so that the aquaculture industry could address global concerns. For more information about the Global Aquaculture Alliance, Mr Chamberlain can be contacted via fax at 314 982-1613 in St. Louis, Missouri USA.

AUSTRALIA'S DEVELOPING ANIMAL QUARANTINE POLICY

The Report of the Australian National Task Force on Imported Fish and Fish Products recommended that Australia's quarantine policies for the importation of aquatic animals be subject to a structured review process. It also recommended that the consideration of products currently allowed entry into Australia be given priority, and identified bait prawns and freshwater crayfish as the imported products requiring consideration with highest priority. Contact Officer is: Warren Vant, Australian Quarantine and Inspection Service, GPO Box 858, Canberra, ACT 2601 Australia, e-mail: warren.vant@dpi.gov.au.

HISTORY AND ECOLOGY OF

PROCAMBARUS CLARKII IN JAPAN

IAA Member Tadashi Kawai (Hokkaido Fisheries Experimental Station, 238 Hamanaka-cho Yoichi-cho Yoichi-gun, Hokkaido 046, Japan) and colleague K. Saito report on the status of *P. clarkii* in Japan.

Nowadays, *Procambarus clarkii* is a familiar aquatic animal to Japanese children (except in Hokkaido). Children call the crayfish Macchachin (Maccha means red) or American Zaragani (means American crayfish). The crayfish are caught in brooks or streams. Crayfish is used for food in the USA and Europe, but not in Japan where they have been used in physiology studies.

Editorial

Thanks to everyone who contributed to this issue, especially Jay Huner for articles and Secretariat news, and Jostein Skurdal for continually providing references.

The IAA 2000 organising committee met recently and plans are well underway for the symposium. The starting date most preferred by members appears to be August 13, this will be confirmed shortly. I will make a presentation in Augsburg regarding itinerary, conference tours, etc.

We will endeavour to publish one more issue of *Crayfish News* (Vol. 20 No. 4) prior to our symposium in Germany, so please send articles as soon as possible.

Glen Whisson, editor

E-mail: twhisson@alpha2.curtin.edu.au

Procambarus clarkii was imported from New Orleans, Louisiana USA as food for the American bullfrog (*Rana catesbeiana*) in about 1930, and they were released at the Kamakura American Bullfrog Farm, Kanagawa Prefecture. Subsequently, the distribution of crayfish spread with frog culture to Honshu, Shikoku, and Kyushu Island by the 1950s (Omori 1986).

The distribution of the crayfish across Japan was mainly due to artificial introduction and natural dispersion. The wide distribution of crayfish may be due to Japanese rice fields (Tambo) which resemble their original swamp habitat. Tambo contain few predators and abundant crayfish food. In the 1960s and 1970s the numbers of crayfish and other animals were greatly reduced by agricultural chemical use in the fields. As for the most northern part of Japan, Hokkaido, *Procambarus clarkii* occurs in Yunokawa in Hakodate, Poroto in Shiraoi and Ukomanbetsu Spa at Mt Daisetsu National Park (Saito and Hiruta, 1995). *Procambarus*

(Continued on page 5)

STATUS OF CANADIAN CRAYFISH (CONT'D)

(continued from page 1)

None of the Canadian species are endemic but their populations are unique in that they represent the northern most points of their distribution and thus often exhibit different life history and ecology patterns from their southern counterparts. Two species, *Orconectes rusticus* and *Orconectes obscurus* have been introduced to Canada from the US, presumably by visiting anglers.

Of the nine native species present, one (*Cambarus diogenes*) is listed as 'Endangered'; one (*Fallicambarus fodiens*) is 'Threatened'; two (*Orconectes propinquus* and *Pacifastacus leniusculus*) are 'Vulnerable'; four (*Cambarus bartonii*, *Cambarus robustus*, *Orconectes immunis* and *Orconectes virilis*) are 'Currently Stable' and one (*Orconectes limosus*) is 'Undetermined'.

This means that presently about 95% of our native crayfish fauna should be considered for protection.

Some of the major threatening factors affecting the Canadian species include the rapid proliferation of exotic species (*O. rusticus* in particular), competition for limited resources, habitat destruction and alteration (such as wetland loss due to urbanization and agriculture), atmospheric

and water pollution (such as lake acidification, sedimentation and toxins input), as well as general warming trends. It is suggested that a greater need exists in Canada for basic research and coordination of data collection and archiving of this very important aquatic group.

Copies of the booklet are available from:
Endangered Species Unit
WWF CANADA

90 Eglinton Ave. East, Suite 504, Toronto,
Ontario M4P 2Z7, Canada
C/- Dr Pete Ewins

E-mail: ewins@wwfcanada.org
WWF is asking for a minimum "donation" of
\$10.00 to cover printing costs.

Having finished with the WWF report I am now concentrating on developing a small, experimental, commercial fishery for the introduced Rusty crayfish (*O. rusticus*) in rivers near my farm in Southern Ontario. As some of you know from Thunder Bay, this species is now a major pest in Ontario and is of grave concern with respect to native crayfish populations which it readily decimates.

Premek & Lee Hamr invite any IAA members travelling to Ontario to visit their bed & breakfast. The Comb&Claw located on beautiful Rice Lake (full of bass!) and sample a plate of local fresh-cooked Rusties (cold, with Aquavit for the Scandinavians!). See our B&B web site: <http://web.globalserve.net/~hamr/index.htm>

He says as far as he's aware *Astacus pachypus* is not being researched anywhere in the former Soviet Republics. However, Dr A. F. Sokolsky (CaspNIRKh, Astrakhan, Russia, fax 7 8512 258636) has data on dynamics of its harvest in the last 50 years, distribution in the Caspian Sea and its ecology there. The harvest 7-10 years ago was at least 100 tons per year.

ASTACUS PACHYPUS EXPLOITATION

IAA Member **Anatoly Alkehnovich** (Institute of Zoology, Academy of Science of Belarus, Scorina str. 27, Minsk 220072, Belarus, e-mail: roshchin@biobel.bas-net.by) sends the following information about the "third" *Astacus* species.

(Continued from page 3)

clarkii occurs where there are hot springs as Tambo, brooks and streams freeze during the winter.

Some Japanese scientists such as Prof. Miyake and Suko have researched the ecology of *P. clarkii* in Japan. Suko (1982) reported that this crayfish grows to maturity in one year and lives for four or five years. Mature females alternate between reproductive and non-reproductive moulting, and spawn from 150 to 600 eggs.

When *P. clarkii* was first introduced into Japan, it reproduced year-round. During the 1950s and 1960s, the reproductive season occurred between fall and spring. Recently, the crayfish have spawned only in the fall, similar to the spawning season in the northern USA. There are four types of hibernation: (1) adult individuals hide in burrows; (2) independent juveniles live under fallen leaves and debris on the river bottom; (3) eggs hibernate with their mother; and (4) dependent juveniles spend winter under the abdomen of their mother. At least two types of burrow shapes, "V" and "Y", have been observed. Chimneys were found at the burrow entrances.

References: Omori, S. 1986. Crayfish. Collecting and Breeding. 19:32-55 (In Japanese); Saito, K. and S. Hiruta. 1995. Distribution of *Procambarus clarkii* (Cambaridae, Crustacea) in Hokkaido, Japan. Bull. Ashikawa City Museum 1:9-12. (In Japanese); and Suko, T. 1982. Studies on the ecology of the crayfish, *Procambarus clarkii* (Girard), molting and its mechanism. Kinen Ronbunshu, Azumashobo, Tokyo, pp. 359-372. (In Japanese).

CRAYFISH SETS BACK GOLF COURSE DEVELOPMENT IN USA

According to the *Nashville The Tennessean* newspaper (Nashville, Tennessee USA), the Nashville Crayfish, *Orconectes shoupi*, an endangered crayfish, has forced the redesign of two holes on a golf course development costing \$150,000 and causing a very serious construction delay. Staff writer Laura Hill in a

20 April 1998 feature article noted that the developers wanted to dam unnamed streams and build lakes along the 11th and 12 holes of a 7,000+m course, the focal point of the community of 438 \$1 million-plus homes. The Nashville Crayfish was added to the endangered species list in 1986. The developers are apparently cooperating with authorities according to Ms Hill.

HASLOTIS FINDS CRAYFISH BURROWS IN ANTARCTICA

Member **Stephen Haslotis** (Dept. of Geological Sciences, University of Colorado, Boulder, Campus Box 250, Boulder, Colorado 80309-0250 USA) wrote that his colleagues and he found Triassic crayfish burrows in Antarctica late last year. Stephen says that he will be doing a paper on both Antarctic crayfish burrows and a new theory as to the origin of crayfishes based on the fossil evidence.

US FOREST SERVICE RECOGNIZES SIGNIFICANCE OF FRESHWATER CRAYFISHES

IAA member **Leigh Ann McDougal** (U.S. Forest Service, 110 Southpark Drive, Blacksburg, Virginia 24060 USA) has now conducted two consecutive annual workshops on Freshwater Snail and Crayfish Biology and Taxonomy. IAA member **Guenter Schuster** (Dept. of Biological Sciences, Eastern Kentucky University, Richmond, Kentucky 40475 USA) has conducted the crayfish section of both workshops. The most recent workshop was held in early April 1998 in Lafayette, Louisiana in cooperation with the University of Southwestern Louisiana and the National Wetlands Research Center (US Geological Survey). Participants learned about the extensive commercialization of wetland dependent *Procambarus clarkii* and *Procambarus zonangulus* in situ. The predator/prey relationship between snails and crayfish was emphasized as was the biodiversity of North America's diverse crayfish fauna - over 330 species.

CRAYFISHES OF MAINE, USA - PUBLICATION AVAILABLE

Member **Scott M. Martin** (712 Harley Drive, Columbus, Ohio 43202 USA) has authored the following review paper:

Martin, Scott M. 1997. Crayfishes (Crustacea: Decapoda) of Maine. *Northeastern Naturalist* 43(3):165-188.

Martin lists seven species in the state located in the northeastern corner of the USA and much more famous for the homarid American lobster than its crayfish fauna. These include: *Procambarus acutus*, *Orconectes limosus*, *Orconectes obscurus*, *Orconectes rusticus*, *Orconectes immunis*, *Orconectes virilis*, and *Cambarus bartonii*. Two, *O. obscurus* and *O. rusticus*, are introduced species. The publication is very informative and a most useful addition to any collection of crayfish papers.

ON-LINE MARKET REPORT SEEKS CRAYFISH INFORMATION

Bill Court (wgcourt@gol.com) has established "FIS Market Reports" to provide current information on "seafood" production. Mr Court is particularly interested in securing the following information on a regular basis: (a) production volume by week/month; (b) sizes produced; (c) prices ex-farm/pond and FOB/CNF; (d) export/import volumes by country of origin/destination; (e) general information about farming/production; and (f) any other general and very current information about crayfish, its market and competing species. Direct inquiries to him via his e-mail address.

THE LOUISIANA CRAYFISH SEASON

The 1997-98 Louisiana crayfish season has been one of the worst on record. The September-December period was very dry with only two significant episodes of rainfall, one in late October and another in mid-December. Farmers, fishermen, and support personnel noted that female crayfish emerged

with hatchlings on each occasion. Few emerged at other times. As a result, absolute densities of similar sized crayfish were increased greatly and growth was slowed by both low temperatures and the crowding effect. Pond crayfish catches were poor into mid-April. Wild crayfish catches were poor into late April. As far as the pond segment of the industry is concerned, most producers will be fortunate to harvest one-third of a normal crayfish crop and have gross profits about 50% of a normal season. The wild crayfish crop cannot be predicted at this writing (late April) because it may be harvested into July depending on hydrological conditions. However, it is very likely to be below normal. [Source: Jay Huner, Crawfish Research Center, P.O. Box 44650, University of Southwestern Louisiana, Lafayette, Louisiana 70504 USA/e-mail: jhuner@usl.edu.]

SPECIAL ISSUE OF BULLETIN FRANCAIS DE LA PECHE ET DE LA PISCICULTURE

This special edition (No. 347 [1997 - 4]) is devoted to crayfish of the genus *Austropotamobius* and includes 15 interesting articles. Titles and page reference are listed below:

VIGNEUX E.: Preface - Lightning survey on the astacology of the genus *Austropotamobius* in Europe, p589.

HOLDICH D.M., ROGERS W.D.: The white-clawed crayfish, *Austropotamobius pallipes*, in Great Britain and Ireland with particular reference to its conservation in Great Britain, p 597.

BERNARDO J.M., ILHEU M., COSTA A.M.: Distribution, population structure and conservation of *Austropotamobius pallipes* in Portugal, p617.

DIEGUEZ-URIBEONDO J., RUEDA A., CASTIEN E., BASCONES J.C.: A Plan of restoration in Navarra for the native freshwater crayfish species of Spain, *Austropotamobius pallipes*, p625.

TROSCHER H.J.: Distribution and ecology of *Austropotamobius pallipes* in Germany, p639.

LORTSCHER M., STUCKI T.P., CLALUNA M., SCHOLI A.: Phylogeographic structure of *Austropotamobius pallipes* populations in Switzerland, p649.

SANTUCCI F., IACONELLI M., ANDREANI P., CIANCHI R., NASCETTI G., BULLINI L.: Allozyme diversity of European freshwater crayfish of the genus *Austropotamobius*, p663.

SOUTY-GROSSET C., GRANDJEAN F., RAIMOND R., FREION M., DEBENEST C., BRAMARD M.: Conservation genetics of the white-clawed crayfish *Austropotamobius pallipes*: the usefulness of the mitochondrial DNA marker, p677.

REYNOLDS J.D.: The present status of freshwater crayfish in Ireland, p693.

BOHL E.: An isolated population of the white-clawed crayfish (*Austropotamobius pallipes*) in the principality of Liechtenstein, p701.

MACHINO Y.: New white-clawed crayfish *Austropotamobius pallipes* (Lereboullet, 1858) occurrences in Carinthia, Austria, p713.

MACHINO Y.: Crayfish of the Upper Soca and Upper Sava Rivers, Slovenia, p721.

BARBARESI S., GHERARDI F.: Italian freshwater decapods: exclusion between the crayfish *Austropotamobius pallipes* (Faxon) and the crab *Potamon fluviatile* (Herbst), p731.

DIEGUEZ-URIBEONDO J., PINEDO-RUIZ J., MUZQUIZ J.L.: Short note - *Thelohania contzejeani* in the province of Alava, Spain, p749.

DIEGUEZ-URIBEONDO J., TEMINO C., MUZQUIZ J.L.: The crayfish plague fungus (*Aphanomyces astaci*) in Spain, p753.

AFTER THE BUBBLE BURST: REDCLAW FARMING IN ECUADOR

By IAA member **Xavier Romero**, PO Box (0901) 5554, Guayaquil, Ecuador.

Ecuador started redclaw crayfish farming 3 years ago. At the moment there are more than 250 ha of ponds built - most farms have 10 to 15 ha of ponds. The experience that has occurred in Ecuador can be helpful to any person interested in redclaw crayfish farming.

In the early days, the local media and companies interested in promoting the aquaculture of this crayfish mentioned that there was a "huge" and "big" market for redclaw. Some promotions mentioned prices of 7-9 USD/lb for whole animals. Others mentioned prices of 4.5 to 6 USD/lb as "conservative", because they could be better. Technology was available and production per

ha was higher than the one in shrimp farming. Also redclaw was either "100 % disease free" or with "no known diseases that can affect production".

After 3 years, farmers are living a different reality from the one advertised. Although in the beginning there were some problems with diseases, they were soon overcome. The real problems for farmers have been extremely high production costs and a market that does not pay even close to the prices advertised.

Potential investors should have a market for this crustacean, as developing a market takes time and effort. Building a farm and then trying to find a market once production is ready for harvesting is not recommended.

An area requiring attention is the prices obtained for redclaw. Some investors in redclaw farming have tried to by-pass the usual distribution channels in seafood products, and sell directly to the restaurants. This can be done, but it is important to realize the amount of product that a restaurant can buy, and that redclaw will compete with other crustaceans in the market. Clients have to get used to redclaw and prefer it to other well established seafood products.

Prices paid to farmers in Ecuador for redclaw are at the very best 50% of what was expected, and depending on the advertised prices, it can be down to 25% of the one budgeted for in some companies.

People interested in developing a crayfish farm can save themselves a lot of money by asking some of the farmers in Ecuador how their business is doing. They will probably hear a different story from the one mentioned in some promotions. Production has not been close to the one advertised, and with investments in the range of 40,000 to 50,000 USD/ha, farms need to produce either a lot of pounds per hectare, or sell redclaw at very

high prices. Few markets are ready or willing to pay high prices.

The species has many good traits for aquaculture, but it is not disease-free as advertised, neither is it "the next shrimp boom". There is probably a place for redclaw aquaculture, but it is very important to have production costs that give a profit for farmers, and the most important part is to be close to a country or market where this crustacean can be sold.

The local newspapers in Ecuador have already published news about the present situation of redclaw farming and marketing.

REGARDING THE ARTICLE "CRUEL IRONY FOR SWEDEN" (CRAYFISH NEWS VOL.20 1/2:15) BY DAVID ROGERS

I'm afraid that Dr Rogers found cruel irony where there is none. If British crayfish farmers have problems in marketing their crayfish, don't blame that on Sweden!

Crayfish farming in Britain started in the 1970s when, on British initiative, *Pacifastacus* juveniles with veterinary certification were imported from Simontorp, a Swedish commercial producer. Simultaneously, stocking material of various species was imported into Britain from Germany, USA, France, Turkey, etc.

The Swedish legislation against the import of live crayfish came into effect in 1969 in order to prevent such uncontrolled stockings and to avoid the simultaneous transfer of parasites and diseases. It certainly had nothing to do with the British crayfish industry. The legislation was in effect almost a decade before the industry even started in Britain, so how could it have thwarted that industry?

Furthermore, during all these years it has been possible to sell foreign crayfish in Sweden, either boiled before shipment or by the

importer under special permit from customs. Approximately 90% of all crayfish sold are cooked anyway, so that is no big obstacle if you really have any substantial volumes, i.e. tons, to sell. Producers in countries like Poland, Greece, USA, Spain and Finland have used this possibility every year.

So, will boiling not be necessary in the name of free trade? If British farmers find it so much easier to ship all their tons of crayfish live rather than cooked they are as welcome to fight on our market as they always have been. There is room, if they are competitive. And as Sweden imports 2,000 tons of crayfish every year and exports none, it hardly seems fair to blame us for not being "so keen on free trade", does it?

A. Stellan Karlsson

Past President and Honorary Life Member of the IAA

CRAYFISH THESIS AVAILABLE

Member **Scott Lewis** has offered free copies of his masters thesis to IAA members. It is titled "Life history, population dynamics, and management of signal crayfish (*Pacifastacus lenisculus*) in Lake Billy Chinook, Oregon".

Write to Scott Lewis at: 726 SW Lower Bend Rd. Madras OR, 97741, USA; phone 541-475-1302 in the US; or send an e-mail to: "scott_lewis@pgn.com".

COMMERCIAL AVAILABILITY OF RED SWAMP AND WHITE RIVER CRAYFISHES AND THEIR MARKETS

The southern USA (Louisiana and Texas) crayfish industry - farmed and capture fisheries - involve two species, the red swamp crayfish, *Procambarus clarkii*, and the white river crayfish, *Procambarus zonangulus*. Red swamp crayfish is the dominant species but white river crayfish can be locally abundant. No true study of the harvest percentages of these two species has ever been conducted. Most authors suggest that red swamp crayfish

account for 90% of the commercial harvest. Research conducted at the University of Southwestern Louisiana's Crawfish Research Center has shown that white river crayfish can account for up to 90% of the total harvest from a particular crayfish production pond.

The most profitable crayfish product form is the live crayfish. The least profitable product form is peeled crayfish tail meat. The bulk of the tail meat is produced in southern Louisiana when the supply of live crayfish exceeds demand in the months of April, May and June. Prices naturally fall making it possible to generate affordable peeled meat. Entrepreneurs are clearly developing more "distant" markets for live crayfish but the absolute quantity of "exported" crayfish has yet to be documented. Some specialists believe that as much as 30% of all crayfish produced in southern Louisiana is sent to distant markets primarily for catered "crawfish boils".

CHINESE CRAYFISH POLITICAL SITUATION IN LOUISIANA USA CONTINUES TO FESTER

In an article in the May 23, 1998 newspaper *The Advocate* (Baton Rouge, Louisiana USA) Ms Angela Simoneaux covers two issues related to the importation of peeled, frozen crayfish meat from the Peoples Republic of China. Commissioner of Agriculture Bob Odom reported that crayfish meat labeled as a product of Singapore was clearly a product of the Peoples Republic of China. A large amount of this product has been impounded by the State of Louisiana since early in 1998 because it is said to be mislabeled. The companies involved, however, contend that because it was processed in Singapore, it is a product of Singapore and tariffs do not apply. Mr Odom also noted that some Chinese exporters are shipping frozen crayfish meat to the USA and valuing it at artificially low costs to reduce tariff rates. For additional details about this on-going dispute, readers may contact Mr Odom at the Louisiana State Department of Agriculture and Forestry, P.O. Box 3334, Baton Rouge, Louisiana 70821 USA.

PSOROSPERMIUM SP. IN THE EUROPEAN CRAYFISH AUSTROPOTAMIOBIUS PALLIPES.

The crayfish parasite *Psorospermium* sp. has been found in two populations of *A. pallipes*. (population of a brook in Granada, Spain and a population of a tributary river of the river Seine in France). Thus, it is now shown that this species can also be infected by this parasite as well as other European, American and Australian species of freshwater crayfish.

Interestingly, only two out of 60 *A. astaci* populations studied have been found to be infected by *Psorospermium* sp. and the levels of infections are low if compared to data from other species. The presence of *Psorospermium* sp. in Spain was earlier reported by Diguez-Urbeondo *et al.*, (1993) in the introduced species *Pacifastacus lenisculus* and in addition, another introduced species, *Procambarus clarkii*, has also been found to carry *Psorospermium* sp. in its natural habitat (Henttonen *et al.*, 1990). We are presently working in order to elucidate the means by which these populations became infected.

FINANCE FOR BRODSKY BOOK

Member **Semyon Brodsky** (Ramot-A, Block 34/3, 97729 Jerusalem, Israel) is one of the most noted Ukrainian astacologists. Prof. Brodsky has endeavored for many years to have his book about crayfish in his native land published in English. IAA simply does not have resources to assist Prof. Brodsky with his financial needs. IAA asks members if they have suggestions/assistance for Prof. Brodsky. Excerpts from his letter of 4 May 1998 to IAA follow.

I want to inform you that the textual part of the book has already been finished. Only some technical work has remained. I think my translators will finish their work by the beginning of the second half of the year. Then publishing will follow.

Again, the main problem is the financing. Where can I find sponsors? The Ministry of

Absorption in Israel has promised me \$4000. I have refused to take the money because this sum is not enough to pay even for translation. I need \$16000 to have the book published. Besides, the Ministry demanded to finish the publication in 1998/9 which was quite impossible for me as my health has been getting worse....

The Moscow Fish Institute has agreed to publish. But I haven't received a concrete proposal including the financial part, yet. First they have to see the manuscript. I think that this variant is better than the Israeli one and it will be cheaper.

At any case I need help...And I'll be very much obliged to you if you could find a sponsor. Taking into account the financial situation in our country, I can't expect any help from the state.

CRAYFISH FEATURE AT INTERNATIONAL CONGRESSES

IAA member Kenneth Söderhäll (e-mail Kenneth.Soderhall@lysbot.uu.se) has provided information about two international congresses which have sessions on crustacean immunity, crustacean culture and biotechnology, and may be of interest to astacologists.

Asian Fisheries Forum in Chiangmai, Thailand, 11-14 November 1998
Contact: DrPademsak Jarayabhand
e-mail jpadems@netserv.chula.ac.th

International Symposium on Progress and Prospects of Marine Biotechnology in Qingdao, China from October 6-9 1998
Contact: Prof. Huai-Shu Xu
e-mail HSXU@lib.ouqd.edu.cn

PUBLICATIONS OF INTEREST TO ASTACOLOGISTS

1. Barki A, T Levi, G Hulata & I Karplus. 1997. Annual cycle of spawning and molting in the red-claw crayfish, *Cherax quadricarinatus*, under laboratory conditions. *Aquaculture* 157 (3-4):239-250

2. Borner, S. T. Buser, R. Egen, A. Frutiger, R. Müller, S. Müller, A. Peter, and H. R. Wasmer. 1998. Die Bekämpfung des Roten Sumpfkrebse (*Procambarus clarkii*) in Schubelweiber und Rumensee (Kanton Zürich). [In German]. Auswertung der Massnahmen 1997. EAWAG, CH-8600 Dübendorf, Switzerland.

3. Brown, B. L., W. E. Dobson, and R. P. Creed. Distribution and abundance of an aquatic symbiotic worm (Annelida: Branchiobdellidae) on two sympatric species of host crayfish (Arthropoda: Crustacea). *The ASB Bulletin* (abstract) 45(2):107-108.

4. Chong MED, NR Foster & LA Zarate 1997 A cytogenetic study of crayfish *Procambarus dignei* (Bouvier, 1897) (Decapoda, Cambaridae) from Lake Camécuaro, Michoacan, Mexico. *Crustaceana* 60(8):875-885.

5. Collas, M. 1997. Sur l'exploitation d'une population d'écrevisses pattegrèles (*Astacus leptodactylus*) par des pêcheurs amateurs. [Narrow clawed crayfish exploitation by sports fishermen]. *L'astaciculteur de France Bull.* 53:2-8.

6. Cooper, JE & MR Cooper. 1997. A new species of troglitic crayfish of the genus *Cambarus*, subgenus *Aviticambarus* (Decapoda: Cambaridae), endemic to White Spring Cave, Alabama. *Proc Biol Soc Wash* 110(4):608-616

7. Cooper, JE. 1998. A new species of crayfish of the genus *Procambarus*, subgenus *Ortmannicus* (Decapoda:Cambaridae), from the Waccamaw River Basin, North and South Carolina. *Proc Biol Soc Wash* 111(1):81-91.

8. Crandall KA 1998 Conservation phylogenetics of Ozark crayfishes: Assigning priorities for aquatic protection *Biological Conservation* 84(2):107-118.

9. Cronin G. 1997. Influence of macrophyte structure, nutritive value and chemistry on the feeding choices of a generalist crayfish. pp307-317 (Ed) E Jepsen, M Sonergaard, M Sondergaard & K Christoffersen *Structuring role of submerged macrophytes in Lakes Ecological Studies: Analysis and synthesis Vol 131* Springer Verlag, New York

10. Figler, MH, GS Blank & HVS Pecke. 1997. Maternal aggression and post-hatch care in red swamp crayfish, *Procambarus clarkii* (Girard): The influence of presence of offspring, fostering and maternal molting. *Mar Freshw Behav Physiol* 29 (1-4):173-194.

11. Fitzpatrick, JF & MK Wicksten. 1998. A new species of the genus *Procambarus* (Crustacea: Decapoda: Cambaridae) from central Texas *Proc Biol Soc Wash* 111(1):146-152

12. GutierrezYurrita PJ, G Sancho, MA Bravo, A Bahanas & C Montes. 1998. Diet of red swamp crayfish *Procambarus clarkii* in natural ecosystems of the Donana National Park temporary fresh-water marsh (Spain) *J Crustacean Biol* 18(1):120-127.

13. Heitler WJ & DH Edwards. 1998. Effects of temperature on voltage sensitive electrical synapse in crayfish *J Exp Biol* 201(3):503-514

14. Hicks, B J 1997 Land use, associated eel production, and abundance of fish and crayfish in streams in Waikato, New Zealand *New Zealand J Marine Freshwater Res* 31(5):635-650.

15. Huner, Jay V. 1998. Evaluation of trap density and type for harvesting crayfish *Procambarus* spp. from small ponds. *Journal of the World Aquaculture Society* 29:104-107.

16. Huotila, M, TJ Marjomaki & E Laukkanen. 1997. The success of crayfish stocking in a dredged river with and without artificial shelter increase. *Fisheries Research* 32(2):185-190.

17. Ishii K, N Tsutsui T Watanabe T Yanagisawa & H Nagasawa. 1998. Solubilization and chemical characterization of an insoluble matrix protein in the gastroliths of crayfish *Procambarus clarkii*. *BioSci Biotechnol Biochem* 62(2):291-301

18. Jimenez, R. & X. Romero. 1997. Infection by intracellular bacterium in red claw, *Cherax quadricarinatus* (Von Martens), in Ecuador. *Aquac Res* 28(12):923-930

19. Kreider JL & SA Watts. 1998. Behavioral (feeding) responses of the crayfish, *Procambarus clarkii*, to natural dietary items and common components of formulated crustacean feeds. *J Chemical Ecology* 24(1):91-112.

20. Laurent, P. J. 1997. Commerce extérieur des écrevisses en France en 1996 et coup d'oeil à cette activité en Europe. [Foreign trade of crayfish in France in 1996 and cursory view on the situation in Europe]. *L'astaciculteur de France Bull.* 53:8-12.

21. Lilley JH, L Cerenius & K Soderhall. 1997. RAPD evidence for the origin of crayfish plague outbreaks in Britain *Aquaculture* 157(3-4):181-186

22. Liras, V., M. Lindborg, P. Nystroem, H. Amadotter, LA Lawton & B Graf. 1998. Can ingested cyanobacteria be harmful to the signal crayfish (*Pacifastacus lemniscatus*)? *Freshwater Biology* 39(2):233-242.

23. Machino, Y. and J. Dieguez-Urbeondo. 1998. Un cas de peste des écrevisses en France dans le bassin de la Seine. *L'astaciculteur de France*. 54:2-11.

24. Minkara MY, TB Lawson, GA Breitenbeck & BJ Cochran. 1998. Co-composting of crayfish and agricultural processing by-products *Compost Science & Utilization* 66(1):67-74.

25. Oliveira J & A Fabiao. 1998. Growth responses of juvenile red swamp crayfish, *Procambarus clarkii* Girard, to several diets under controlled conditions. *Aquaculture research* 29(2):123-130.

26. Omori S. 1986. Crayfish. Collect and Breeding. 19: 32-55. (in Japanese)

27. Parkyn, S M, C F Rabeni & K J Collier. 1997. Effects of crayfish (*Paraneopros planifrons*:

Parastacidae) on in-stream processes and benthic faunas: a density manipulation experiment. *New Zealand J Marine Freshwater Res* 31(5):685-692

28. Quigley, PA & AJ Mercier. 1997. Modulation of crayfish superficial extensor muscles by a FMRFamide-related neuropeptide. *Comp Biochem Physiol PTA* 118 (4):1313-1320

29. Rabeni, CF, KJ Collier, SM Parkyn & BJ Hicks. 1997. Evaluating techniques for sampling stream crayfish (*Paraneopros planifrons*). *New Zealand J Marine Freshwater Res* 31(5):693-700.

30. RodriguezSosa L, A Picones, GC Rosete, S Islas & H Arechiga. 1997. Localization and release of 5-hydroxytryptamine in the crayfish eyestalk. *J Exp Biol* 200(23):3067-3078

31. Romero, X & R Jimenez. 1997. *Epirystis* sp (Ciliata:Peritrichida) infestation on the eggs of berried red claw *Cherax quadricarinatus* females in Ecuador. *J World Aquacult Soc* 28(4):432-

32. Saenz F, U Garcia & H Arechiga. 1997. Modulation of electrical activity by 5-hydroxytryptamine in crayfish neurosecretory cells. *J Exp Biol* 200(23):3079.

33. Sagi, A., A. Milstein, Y. Eran, D. Joseph, I. Khalaila, U. Abdu, S. Harpaz & I. Karplus. 1997. Culture of the Australian red-claw crayfish (*Cherax quadricarinatus*) in Israel - II. Second growout season of overwintered populations. *Israel Journal of Aquaculture* 49(4):222-

34. Saito K. and S. Hirata. 1995. Distribution of *Procambarus clarkii* (Cambaridae, Crustacea) in Hokkaido, Japan. *Bull. Asahikawa City Mus.* (1) 9-12. (in Japanese)

35. Suko T. 1982. Studies on the ecdysis of the crayfish, *Procambarus clarkii* (Girard), molting and its mechanism. *Kimun Ronbunshu, Azumashobo, Tokyo*. pp. 359-372. (in Japanese)

36. TA Keller & LC Ruman. 1998. Short-term crayfish effects on stream algae and invertebrates. *J Freshwater Ecology* 13(1):97-104.

37. Tierney, AJ, J Blanck, & AJ Mercier. 1997. FMRFamide-like peptides in the crayfish (*Procambarus clarkii*) stomatogastric nervous system: distribution and effects on the pyloric motor pattern. *J Exp Biol* 200(24):3221-3234

38. Twibell, RG, KA Wilson & PB Brown. 1998. Effect of acclimation temperature and temperature changes on molting and survival of ablated and nonablated crayfish *orconector writis*. *J World Aquaculture Soc* 29(1):23-30

39. Whitledge OW & CF Rabeni. 1997. energy sources and ecological role of crayfishes in an Ozark stream: insight from stable isotopes and gut analysis. *Canadian J Fish Aquat Sci* 54(11):2555-2563.

40. Zare, S & P Greenaway. 1997. Ion transport and the effects of moulting in the freshwater crayfish *Cherax destructor* (Decapoda: Parastacidae). *Australian J Zoology* 45(5):539-