

INTERNATIONAL ASSOCIATION
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NEWSLETTER

J.F. Payne and J. Huner, editors

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PRESIDENT'S MESSAGE -- The Association has experienced an unfortunate period since the Lund Congress and was faced for the first time with a very delicate situation. After regular exchange of information between Members for many years, a quite total silence gave the impression that our group was inactive. The efforts of Stellan Karlsson and other past presidents and officers to maintain and develop our Association were threatened with destruction after 13 years of success.

Thanks to the efforts of Jim Payne and Jay Huner, this gloomy period is over. The newsletter is again being published regularly and life is returning to our Association. I ask each of you to help us by sending news, comments, references, and criticisms for inclusion in our Newsletter. To provide services, we do need money so please send your membership fees to Jim Payne if you have not yet done so.

I regret that we cannot meet this year in Canada but our Swiss colleagues will host the next Congress at Lausanne and are organizing a nice program. I hope many of you can attend this event and continue your efforts to enhance the success of our Association.
-- Pierre J. Laurent, January 1986.

SEVENTH CONGRESS, INTERNATIONAL ASSOCIATION OF ASTACOLOGY -- The dates for this meeting are August 3 (Monday) through August 6 (Thursday), 1987 in Lausanne, Switzerland. Organizer is Professor M. Pelot. More precise details including estimation of costs will appear in the May 1986 Newsletter.

NEW REGULATIONS CONCERNING IMPORTATION OF LIVE CRAYFISHES INTO FRANCE -- Decree No.85-1189 of 8 November 1985, Ministry of the Environment, Government of France limits unrestricted transportation of living crayfishes to four species, Astacus astacus, Astacus torrentium, Astacus leptodactylus, and Austropotamobius pallipes. No exotic species may be transported alive without permission but according to IAA President Pierre J. Laurent, there is an active move to ban imports of all living exotic species. The decree apparently ignores the well established exotic Orconectes limosus. A previous decree prohibits import of any living Procambarus clarkii and is apparently still in effect.

BURROWING CRAYFISHES IN OHIO (USA) -- Cambarus diogenes and Fallicambarus foidens are widely distributed in North America and are primary burrowers. Rarely seen at the surface, IAA member Jim Norrocky (Rt. 1, Vickery, Ohio 43464 USA) has been studying their life histories, especially surface movements, in northern Ohio for some years now. He has found

that some move relatively long distances as adults, a situation not previously expected; however, Mr. Norrocky's studies have confirmed that both species confine most of their activities to burrows.

DECAPODS OF WISCONSIN/CRAYFISH FOOD HABITS AND PREDATORS/GLOBAL CRAYFISH INTRODUCTIONS -- Dr. Horton H. Hobbs III (Biology Department, P.O. Box 720, Wittenberg College, Springfield, Ohio 45501 USA) writes that Dr. Joan Bass and he have completed a lengthy manuscript about the decapods of the State of Wisconsin (USA). This will be published by Dr. Bass' employer the Milwaukee (Wisconsin) Public Museum in due course. Dr. Hobbs notes that Dr. Bass and he have also written a review of the trophic dynamics of crayfishes and have appended, in tabular form, food items of crayfishes as well as predators of crayfishes and references these data with the literature. The trophic manuscript is about 100 pages. In addition, Dr. Hobbs has been working on global introductions of crayfishes. He has inquired about possible sources of funding for publication of these two monographs. IAA members with suggestions should contact Dr. Hobbs directly.

BRAZILIAN CARCINOLOGISTS -- Professor Dr. Ludwig Buckup is Presidente da Sociedade Brasileira de Carcinologia. He has inquired about IAA membership and notes that he studies the Brazilian Parastacidae. He wishes to establish closer contacts with fellow astacologists. Address correspondence to Prof. Dr. Buckup at: A/C Universidade Federal do Rio Grande do Sul; Instituto de Biociencias; Departamento de Zoologia; Av. Paulo Gama 40, Sala 321; CEP 90040 Porto Alegre (RS), Brazil.

CRAYFISH STUDIES IN MEXICO -- Ms. Esther Perez Hurtado (c/o Dra. Meredith Gould; Lab. de Reprod. Animal; UMF--ENEP--UNAM; Tlalnepantla, Mexico; Mexico) is studying cuticular lamellae in *Procambarus clarkii* to determine if these may be used to age crayfishes. She requests that readers with information on this subject contact her. Ms. Hurtado notes that one species of *Cambarellus* (*C. patzcuarensis*) is a human food in Mexico being eaten by the people who live on the shores of Lake Patzcuaro in Michoacan. This crayfish is sold for food in the markets of Mexico City, too. Apparently, this "dwarf" crayfish grows quite a bit larger than other members of its genus.

SOVIET CRAYFISH LITERATURE -- A list of Soviet papers that could not be included in the proceedings of our Lund Congress follows. IAA is now examining the possibility of publishing these separately and distributing them to the membership.

FEEDING OF *PACIFASTACUS LENIUSCULUS* IN THE LITHUANIAN SSR - E.A. Tamkeviciene, Institute of Zoology and Parasitology of the Academy of Sciences of the Lithuanian SSR, Vilnius 232600, USSR.

BEHAVIOUR OF *PACIFASTACUS LENIUSCULUS* JUVENILES IN ELECTRIC FIELDS -- A. Burba, Institute of Zoology and Parasitology of the Academy of Sciences of the Lithuanian SSR, Vilnius 232021, USSR.

MICROFLORA OF THE DIGESTIVE TRACT OF THE CRAYFISH *PACIFASTACUS LENIUSCULUS* DANA -- L. Mickeniene, Institute of Zoology and Parasitology of the Academy of Sciences of the Lithuanian SSR, Vilnius 232600, USSR.

FORMAL-LOGICAL ANALYSIS OF COMPLEX DIFFERENTIAL BEHAVIOUR OF RIVER CRAYFISH -- J. V. Doroshenko, Institute of Zoology and Parasitology of the Academy of Sciences of the Lithuanian SSR, Vilnius 232600, USSR.

INFLUENCE OF FEEDING ON GROWTH AND METABOLISM IN THE JUVENILES OF *P. LENIUSCULUS* -- G. Mackeviciene, L. Mickeniene and A. Teretyev, Institute of Zoology and Parasitology of the Academy of Sciences of the Lithuanian SSR, Vilnius, 232600 USSR.

THE ACTIVITY LEVEL OF DIGESTIVE ENZYMES UNDER DIFFERENT ASPECTS OF THE FEEDING BEHAVIOUR OF *ASTACUS ASTACUS* L. -- G. Mackeviciene, Institute of Zoology and Parasitology of the

Academy of Sciences of the Lithuanian SSR, Vilnius 232600 USSR.

THIGMOTACTIC AND PHOTOTACTIC BEHAVIOUR OF RIVER CRAYFISH -- A. Burba, Institute of Zoology and Parasitology of the Academy of Sciences of the Lithuanian SSR, Vilnius 232600 USSR.

PRODUCTION OF JUVENILE PACIFASTACUS LENIUSCULUS FREE FROM THE PLAGUE-CAUSING AGENT APHANOMYCES ASTACI -- A. A. Mazyliis, Institute of Zoology and Parasitology of the Academy of Sciences of the Lithuanian SSR, Vilnius 232600, USSR.

CRAYFISH CULTURE IN SOUTH CAROLINA (USA) -- Dr. Jack M. Whetstone (Marine Extension Specialist, P.O. Drawer 1100; Gerogetown South Carolina 29442 USA) provides news about the developing crayfish culture industry there. Over 320 ha have now been stocked with Procambarus clarkii and Procambarus acutus acutus. Best production is in upland areas. An interesting development is that one grower is on a reverse cycle of harvesting in the warm months with a fallow period during the cool months. He uses hay for feed. The large, native crayfish Procambarus troglodytes does appear in some ponds but in very small numbers (1%). Dr. Whetstone feels that this is due to trap mesh size and that if smaller mesh were used, then more would be caught. Dr. Whetstone has several useful publications available discussing crayfish culture in South Carolina and may be contacted about titles and availability. One of the latest references is: Pomeroy, R.S. and Luke, D.B. 1985. Budgets and Cashflow Statements for South Carolina, Crawfish Production. Clemson University Cooperative Extension Service, Extension Economics Report 83, 37 pages.

MARRON NEWS -- The Australian marron, Cherax tenuimanus, is being widely touted as a candidate for aquaculture outside of its native southwestern Australia. Little official information is available about cultural efforts largely because they involve private entrepreneurs. At this writing, we know of no one successfully breeding this species outside of Australia with the exception of Mr. Gerald Cubitt (George, Republic of South Africa). Dr. David Rouse (Department of Fisheries and Allied Aquacultures, Auburn University, Auburn, Alabama 36830 USA) has worked with two groups of juvenile marron from Australia. He has reported acceptable growth but eventual mortality due to extreme sensitivity to poor water quality. A Mr. Al Smith (P.O. Box 10141, Denver, Colorado 80210 USA) is said to be coordinating pilot marron culture projects and was to have met with interested parties at the major Aquaculture Reno '86 meeting in January 1986 but no news is available about that meeting [RE: The World Mariculture Society Newsletter, Vol. 16, No. 4. 1985].

THIRD INTERNATIONAL CRAWFISH TASTING AND TRADE FAIR -- This fair designed to promote consumption of Louisiana crayfish was held 21-22 February 1986 in Lafayette, Louisiana. This annual affair brings together industry representatives so that they may merchandise products to expand intrastate, interstate, and international markets. Inquiries about this Fete des Ecrevisses may be addressed to the Louisiana Crawfish Farmers' Association, P.O. Box 91544, Lafayette, Louisiana 70509 USA.

EUROPEAN AQUACULTURE TRADE DIRECTORY -- This is a multilingual (5 languages) reference guide, listing names, addresses, telephone and telex numbers of suppliers of aquaculture products, equipment, chemicals, feedstuffs and additives, services, sources of aquaculture information, as well as aquaculture research centers and organizations interested in and/or involved in the aquaculture field. Cost is 590 Belgian francs (about \$10 US) per copy including surface postage. Publisher is: European Aquaculture Society, Prinses Elizabethlaan 69, B-8401 Bredene, Belgium.

NEW METHODS IN CRAYFISH CULTURE -- This is the translated title of a Finnish article by Markku Pursiainen and Mikko Saarela (Finnish Game and Fisheries Research Institute, Fisheries Division, P.O. B. 193, SF-00130, Finland). It describes a new incubator for astacid crayfishes which employs individual, horizontal plastic pipes through which oxygenated water flows preventing low oxygen problems associated with box-like enclosures previously used in Finnish crayfish hatcheries. A molt cages for females is also pictured. The reference is: Pursiainen, M. and Saarela, M. 1985. Uusia menetelmiä ravunviljelyssä. Suomen Kalankasvattaja. 4/1985 pages 60-61. The techniques can be

easily understood based on the excellent photographs despite the Finnish text.

FISHERIES SOFTWARE REGISTER -- This is a register of computer software in fisheries and related sciences. Its aims are: (1) to provide a register of computer software relevant to fisheries and related sciences; (2) to provide a forum for establishing guidelines for the standardization of program development; (3) to provide a clearing house for software; and (4) to provide a software testing and polishing service, with an emphasis on converting and standardizing input/output interfaces. Direct inquiries to: IOTAS PTY LTD, P.O. Box 19, Margate, Tasmania, Australia 7153.

CRAYFISH INTRODUCTIONS, PROCAMBARUS CLARKII -- In preparing to address introductions at the Lausanne Congress, we are trying to document introductions of Procambarus clarkii, the most cosmopolitan of crayfish species. It is known to be present in feral populations in the following countries outside of its native continental USA and Mexico: Costa Rica, Brazil, Dominican Republic, Portugal, Spain, Uganda, Kenya, Republic of China, Japan, Taiwan, and Hawaii. Introductions for cultural purposes are known from Zambia and France (very limited in both places). Introductions for cultural purposes are suspected in the following countries: Guatemala, Belize, Columbia, Ecuador, Venezuela, Nigeria, Zimbabwe, and Sudan. It has been found in a natural pond in Sweden (see last newsletter). Send information to: Jay V. Huner, Chairman, IAA Transplantations Committee, P.O. Box 10809, Southern University, Baton Rouge, Louisiana 70813 USA. Information on any known or unknown introductions is solicited.

INTERCRAYSYP V -- The proceedings of our 1981 Davis Congress are still available at \$32 per copy in the USA and \$35 elsewhere. If your library does not have this volume, it is recommended that you request it. Previous Congress proceedings are out of print. Contact AVI Publishing Company, P.O. Box 831, Westport Connecticut 06881 USA. Domestic postage is \$3 per copy.

STATUS OF CRAYFISH EXPLOITATION IN CANADA -- Canadian Crayfish is the title of a recent article that appeared in Crayfish Tales (Vol. 4, No. 4, 1985). Authored by Dr. Walter To. Momot (Biology Department, Lakehead University, Thunder Bay, Ontario P7B 5E1, Canada). It mentions Pacifastacus leniusculus in western Canada and Orconectes virilis and Cambarus robustus in eastern Canada. Very limited fisheries exist at this time.

THE CRAYFISH. ITS NATURE AND NURTURE (1985) -- This brief book by Roy E. Groves discusses European astacid crayfish and the introduced signal crayfish. It is an interesting primer for novices and inexpensive at 8.50 pounds sterling and is available from Fishing Books Ltd., 1 Long Garden Walk, Farnham, Surrey, England.

CRAYFISH PAPERS AT AQUACULTURE RENO '86 MEETING -- A crayfish session was held during the annual 19-23 January 1986 meeting of the World Mariculture Society at the Aquaculture Reno'86 [Reno, Nevada USA] meeting. Titles and authors were: (1) Predation by dragonfly naiads, Anax junius (Odonata: Aeschnidae), on young crawfish, Procambarus clarkii (Decapoda: Cambaridae) by J. F. Witzig, J. V. Huner, and J. W. Avault, Jr.; (2) Dietary lipid requirements of the white crayfish (Procambarus acutus acutus) by D. A. Davis and E. H. Robinson; (3) Comparison of the indicator and total fecal collection methods for determining apparent digestion coefficients for red swamp crawfish by P. B. Borwn, C. W. Williams, E. R. Robinson, A. L. Lawrence, and D. M. Kigana; (4) Comparison of manufactured and natural crawfish baits on trap yields in crawfish/rice ponds by F. Meriwether; (5) Effects of stocking density on growth of red swamp crawfish, Procambarus clarkii by C. G. Lutz and W. R. Wolters; and

(6) An ultrastructural examination of the vas deferens and spermatophore formation in Cherax albidus by D. Beach and P. Talbot. A poster paper also dealt with crayfish biology. It was, Analysis of *Astacus astacus* and *Procambarus clarkii* mitochondrial DNA using restriction endonuclease digestion by T. K. Palva, J. V. Huner, H. Lehtaslatho, M. Niemelainen, O. V. Lindqvist and T. Palva. A paper about crayfish in another World Mariculture Society session was, Contributions of manures and supplied pellets to fish, prawn, and crayfish growth as indicated by stable carbon isotope ratios by H. Buck, M. S. Henebry, M. L. Hove, and D. D. Coleman. The World Mariculture Society has changed its name to the World Aquaculture Society, effective during its Reno meeting. Inquiries about abstracts of the various sessions may be directed to: The World Aquaculture Society, Pleasant Hall, Louisiana State University, Baton Rouge, Louisiana 70803 USA.

A crayfish related paper presented during a concurrent meeting of the Fish Culture Section of the American Fisheries Society was, Crawfish forage production by eleven rice varieties by M. W. Brunson, B. J. Hoff, and R. W. Taylor. Dr. Brunson may be contacted at the LSU Rice Research Station, Crowley, Louisiana USA.

CRAYFISH PLAGUE SITUATION IN GREAT BRITAIN -- A recent paper describes the Aphanomyces astaci situation in Great Britain. The reference is: Marren, Peter. 1986. The Tethal harvest of crayfish plague. New Scientist 30 January 1986. pages 46-50. The lead statement aptly summarizes the contents, "After more than a century devastating Europe's freshwater crayfish, a killer fungus has found its way to Britain. It may now be too late to save the country's native crayfish." The author is highly critical of efforts to cultivate Pacifastacus leniusculus which has been implicated as the vector for the fungal pathogen.

STATUS OF CRAYFISH HARVESTING IN NEW ZEALAND -- Brian Jones (Ministry of Agriculture and Fisheries, Fisheries Research Centre, Greta Point, P.O. Box 297, Wellington, New Zealand) sends the following status report about the harvest of crayfish in New Zealand.

New Zealand is divided into Acclimatisation Districts each run by an Acclimatisation Society elected from sportsmen and women in the district. These societies are responsible for the administration of the regulations in their area as they apply to introduced fish (trout and salmon). There are two exceptions. The Taupo/Rotorua Acclimatisation areas, and the Southern Lakes areas are administered by the Department of Internal Affairs.

Within all these areas, with the exception of Taupo and Southern Lakes, there are no restrictions at all on taking freshwater crayfish for private use, but harvesting for sale is prohibited under the 1983 Act (though prior to 1983 it was technically possible, nobody did so).

Farming of freshwater crayfish is permitted, however, provided a licence is held, and the produce from such a farm can be sold.

The Southern Lakes district is almost all National Park and I think that is where Internal Affairs get the authority to ban the taking of any native crayfish (I haven't checked).

The Taupo region was a gift by the Te Arawa tribe to the Nation as a Park and under the legislation dealing with that, all the native fish (including freshwater crayfish) can only be taken by members of the Te Arawa tribe (Trout are not native). However, I don't think most people know that the Trust Board set up under that legislation have the power to sell the crayfish from the lake. Certainly no-one has yet done so.

So, in summary, most people with access to freshwater where the crayfish occur could legally take them for home use. How many actually do so we don't know.

There have been no commercial sales of crayfish yet, though interest in aquaculture remains very high.

IAA MEMBERSHIP/DUES -- IAA membership is open to anyone expressing an interest in any aspect of crayfish biology and exploitation. Dues are \$20 for the period between International Congresses (2 or 3 years - next, Lausanne, Switzerland, 3-6 August 1987). A quarterly newsletter is distributed to all members. Send inquiries/funds in U.S. dollars to:

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