

# Fish Quarantine and Fish Diseases in Southeast Asia

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Report of a workshop  
held in Jakarta, Indonesia,  
7-10 December 1982

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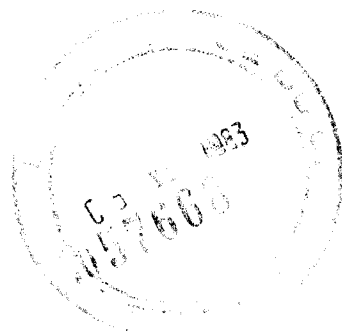
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# **FISH QUARANTINE AND FISH DISEASES IN SOUTHEAST ASIA**

**REPORT OF A WORKSHOP HELD IN  
JAKARTA, INDONESIA, 7-10 DECEMBER 1982**



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### **Résumé**

Le commerce du poisson vivant — alevins pour la pisciculture — augmente rapidement, attendu que les coûts de la pêche sont à la hausse et que les rendements diminuent. L'aquaculture moderne repose sur l'approvisionnement en alevins dont l'introduction, telle que pratiquée aujourd'hui, compromet la survie des espèces (souvent une seule par élevage) cultivées de façon intensive. Déjà, des épizooties signalées en Asie du Sud-Est sont attribuées aux nouveaux stocks et ces incidents risquent de se reproduire si les gouvernements de la région ne réglementent pas la circulation des poissons vivants afin de n'autoriser l'entrée qu'aux populations exemptes d'agents parasitaires ou pathogènes. Cette situation existant dans plusieurs pays, des experts en maladie des poissons d'Indonésie, de Malaisie, des Philippines, de Singapour, de la Thaïlande ainsi que des consultants du Royaume-Uni, du Canada et de l'Australie, se sont réunis à Djakarta, du 7 au 10 décembre 1982 pour examiner la question et faire part de leur expérience. L'Indonésie imposera incessamment une quarantaine à tous les stocks de poissons vivants importés ou transportés d'une île à l'autre, dans le pays. L'isolement est de 14 jours et comprend l'analyse d'échantillons en laboratoire pour détecter la présence de parasites, d'infections bactériennes, etc, ainsi que des symptômes ou signes pathognomoniques. La période de quarantaine, qui est de même durée en Australie, suffit à obtenir les résultats des laboratoires, à identifier la plupart des symptômes et des maladies et à garantir l'importation de sujets exempts de pathogènes humains. Singapour applique cette mesure à titre expérimental et les autres pays étudient divers moyens de contrôle. Cependant, la pénurie de personnel et de locaux pour effectuer les diagnostics et les traitements fait obstacle à l'établissement de services appropriés.

### **Resumen**

El tráfico de peces vivos —larvas para las operaciones de cría— aumenta rápidamente a medida que se elevan los costos de la pesca y disminuyen sus rendimientos. Este movimiento de peces es esencial para la acuicultura moderna, pero, bajo los procedimientos actuales, representa un serio riesgo para las grandes cantidades de pescado (a menudo una sola especie) que se cultivan en pequeñas áreas. En el Sudeste Asiático varios epidemias pueden ser ya vinculados a la introducción de peces importados, y tales incidentes pueden volverse cada vez más comunes si los gobiernos de la región no toman medidas para controlar el tráfico de peces y asegurar que los cargamentos están libres de patógenos y plagas. Muchos de los países han reconocido el problema, e investigadores en enfermedades de los peces, procedentes de Filipinas, Indonesia, Malasia, Singapur y Tailandia, así como consultores del Reino Unido, Canadá y Australia se reunieron en Yakarta del 7 al 10 de diciembre de 1982 para discutir el problema y compartir experiencias. Ellos señalaron que Indonesia está en proceso de introducir la cuarentena obligatoria para todas las especies vivas de peces que se importen al país o sean transportadas entre las islas que lo conforman. La cuarentena es de 14 días durante los cuales las muestras del cargamento son sometidas a exámenes de laboratorio en búsqueda de parásitos, infecciones bacterianas, etc, y observadas en cuanto a signos y síntomas de enfermedades. La duración de la cuarentena, igual a la propuesta recientemente en Australia, asegura que no se importan patógenos humanos con los peces, que se obtienen los resultados de laboratorio y que los síntomas de la mayoría de enfermedades alcanzan a aparecer. Singapur está ensayando procedimientos de cuarentena y los otros países estudian las opciones de control. Sin embargo, la escasez de personal y la carencia de instalaciones para diagnóstico y tratamiento de las enfermedades constituyen una limitación seria al desarrollo de servicios apropiados.

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## MALAYSIA<sup>1</sup>

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Fish diseases are at present not emphasized in Malaysia because aquaculture itself is still a relatively young industry and is not yet intensive. Nevertheless, freshwater fish ponds are becoming popular, particularly in Sabah, and demand for fish fry is rapidly increasing. Mass mortalities in public waters or in fish ponds are not common, although isolated cases have occurred in government fish-breeding stations. The common causal agents are *Ichthyophthirius multifiliis*, *Lernaea* sp., *Argulus* sp., *Dactylogyrus* sp., and *Trichodina* sp., primarily affecting fish fry (Shariff 1982c). Mass mortalities in public waters have resulted more from factory effluents and insecticide contamination than from diseases.

Mortalities have not been monitored or documented. Qualified personnel and adequate facilities for fish-disease study are lacking, but a sub-unit within the Fisheries Department is to be launched soon, headed by a fisheries officer who will coordinate national efforts on fish diseases and pollution. Systematic documentation and follow-up (including treatment) will be done when there are any reports of fish mortalities. This will enable researchers to determine the distribution of various fish diseases in the country.

The department has no established policy on quarantine; live fish are freely imported and

exported without certification of health. In 1980, 4.8 million fry (US\$ 118 000) were imported by Peninsular Malaysia, and about 38 000 were exported. In Sabah, imports comprised more than 290 000 aquarium fish and about 60 000 Chinese carp fry. The potential risks of disease introductions from such live-fish traffic have been recognized by the department, which has drafted import/export regulations (Fisheries Act) for the sanitary condition of fish imported or exported. At the state level, regulations in Sabah require that all importers and exporters apply for approval from the Department of Fisheries, and visual inspection is carried out occasionally, although there is no quarantine service.

In most cases when sick fish are observed, they are isolated from the others; if the disease is serious and widespread, the fish are destroyed and the ponds treated with lime.

### DISEASES

The three most common parasites in Malaysian freshwater-fish culture are *Argulus* sp., *Lernaea* sp., and *I. multifiliis*. *Argulus* sp. and *Lernaea* sp. have been reported in fish from some of the government breeding centres, from private farms, and from the freshwater Fish Research Centre in Malacca. *Lernaea piscinae* has been found only in bighead carp and has been controlled by bathing the affected fish in Dipterex, 0.25 ppm. *Ergasilus* sp. has also been reported in freshwater fish (MARDI 1981).

*Myxobolus* sp. has been identified frequently from Japanese koi and goldfish (Shariff 1982a). The protozoan *I. multifiliis* was reported from a breeding centre in Perak several years ago, with many fry and fingerlings of *Puntius gonionotus* and *Cyprinus carpio* dying as a result. The water supply was the suspected source of infection;

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Bighead carp infested with *Lernaea polymorpha*. As many as 400 parasites have been found on a single fish.

bath treatment with formalin, 25 ppm, was effective. Many freshwater fish including *Ctenopharyngodon idellus*, *Hampala macrolepidota*, *Pangasius sutchi*, *P. gonionotus*, and *Tilapia mossambica* have been infested with *Trichodina* sp. (MARDI 1981), and *Oodinium* sp. has been

isolated from *Rashora heteromorpha* and *Trichogaster leeri*.

From the marble goby (*Oxyeleotris marmoratus*), *Henneguya* sp. has been isolated and *Chilodonella hexasticha* has been isolated from *Aristichthys nobilis* (Shariff 1982b).

In 1963, the *Acanthogyrus partispinus* was found in *H. macrolepidota* (Furtado 1963). *Pallisentis gaboes* is also reported as a parasite to *Ophicephalus striatus* in Malaysia (Fernando and Furtado 1962). Other cestodes that have been isolated from freshwater fish are *Senga malayana*, *S. parva*, *S. pytiiformis*, *Lytocesthus parvulus*, *Camallanus fehi*, and *C. longitridentatus*.

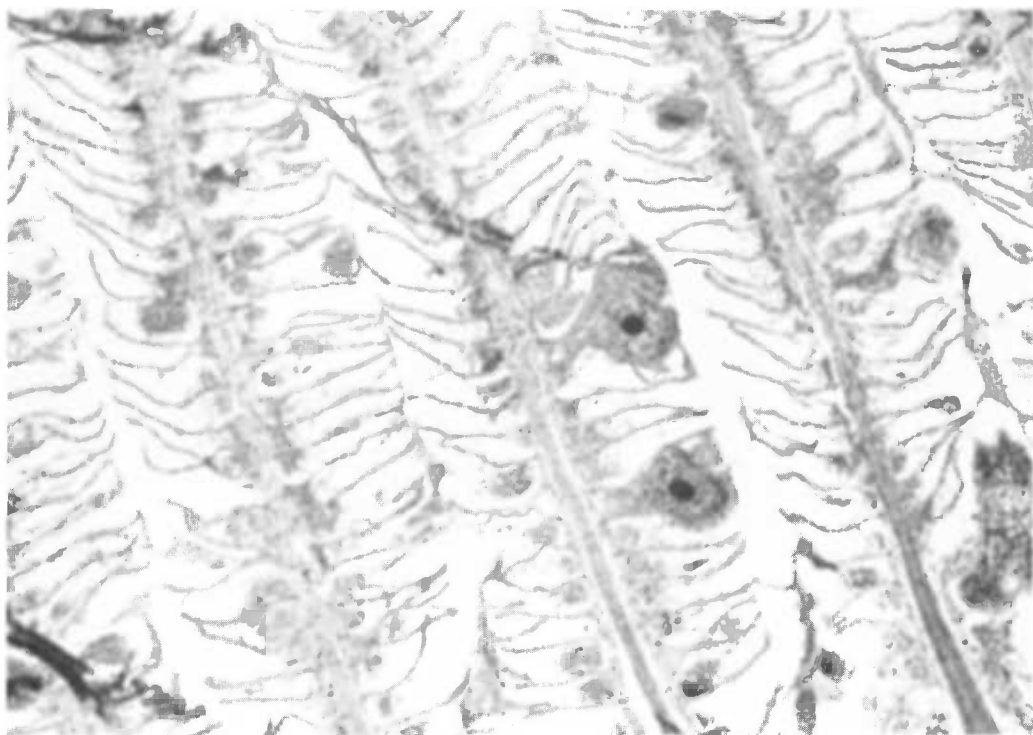
Diseases that are being imported by aquarium fish are monogenetic trematodes, *Costia* sp., *Chilodonella* sp., *Trichodina* sp., *Lernaea cyprinaea*, and *Argulus* sp. (Shariff 1980). *Aeromonas* sp. and *Pseudomonas* sp. have been isolated from wild freshwater fishes, but these bacteria were probably secondary invaders of lesions and skin irritations caused by excessive use of fertilizer on nearby farms.

Fungal infections were observed in prawn hatcheries in Malacca in 1974, and many *Macrobrachium rosenbergii* larvae died. Three fungi were isolated: *Penicillium* sp., *Pullularia* sp., and *Aspergillus* sp. However, it was not clear whether these fungi were the primary cause of death (Shariff et al. 1978).

Filamentous bacteria, perhaps *Leucotrix* sp., have been observed frequently on the larvae of *M. rosenbergii* in the Fisheries Research Institute, Penang. The infected larvae look weak and pale. In one episode, the bacteria were found in decaying organic matter in the culture tank. Thus, changing the water and frequently removing the excess food might have prevented the disease. Protozoans, tentatively identified as *Epistylis* sp. and *Zoothamnium* sp., have also been observed in giant freshwater prawns from this hatchery.

Ectoparasites have been observed on fish cultured in floating net cages in Malaysia and in the Tungku Abdul Rahman Aquarium. Isopoda, *Narocila sundacea*, were frequently isolated, and *Gnathia* sp. has also been found.

Vibriosis or red-pest disease caused by *Vibrio* sp. is the most important disease in the rearing of grouper in floating cages in Malaysia (Chua and Teng 1977). The groupers contract this disease through injuries during handling or overcrowding or after being parasitized. Near Kota Kinabalu, grouper fry are caught from the wild and stocked in ponds at 10/m<sup>2</sup>. No mass mortalities



General view of gill tissue infested with *Ichthyophthirius multifiliis*. The parasite is large and is found under the epithelial lamellar cell.

have been reported in this operation, but annual losses from disease are about 5%. Fin rot, skin lesions, and abdominal inflation have also been observed in cage culture.

In June and August 1982, 100% mortalities were experienced with 10-day-old sea bass larvae reared in Majuikan hatchery, Kedah. Bacterial infection was suspected and might have been introduced with *Brachionus plicatilis* used as feed. In September 1980, 80% mortalities at the third zoeal stage of *Penaeus monodon* were caused by an unidentified bacterial disease. In spite of abundant food, fresh specimens, examined microscopically, had empty guts, indicating loss of appetite.

Heavy infections caused by ciliated protozoans, *Trichodina* sp. and *Zoothamnium* sp., were diagnosed on fresh specimens of *P. monodon*, third major and early postlarvae. More than 60% of the larvae died.

### DISCUSSION

The three major institutions involved with fish diseases at the national level are the Fisheries Research Institute, Penang, the Agriculture Uni-

versity at Serdang, Selangor, and the Science University, Penang.

To date, no details of a quarantine system have been worked out, but fish quarantine is likely to become increasingly important as fish farming gains acceptance. Even at present, the country is not self-sufficient in fry production and needs certification procedures to reduce the risk of importing diseases. However, trained personnel, equipment, and disposal systems for wastewater are lacking.

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