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Freshwater fishes of Southeast Asia: potential for the aquarium fish trade and conservation issues

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Southeast Asia is an area rich in biodiversity, with a high degree of endemism in both flora and fauna. Many freshwater fish species have been exploited for the ornamental fish trade. As the population in South East Asia increases, vast tracts of forests are cleared for agricultural, industrial and urbanization purposes. To conserve and sustainably exploit the wild fish population, measures should be adopted to protect this natural resource. Already, several ornamental species have been severely overexploited, e.g. bala shark (*Balantiocheilos melanopterus*), pygmy loach (*Botia sidthimunki*) and arowana (*Scleropages formosus*), but the extirpation of local populations occurs for many reasons, including deforestation, and not just because of fishing for the trade. There are also still many species that have great ornamental fish potential. Wild fish species have also been successfully bred in captivity and conserved, e.g. tiger barb (*Puntius tetrazona*), bala shark, pygmy loach and arowana. Other methods of conservation include public education, leaving pristine forests intact and reforestation. The aquarium trade of the bala shark, harlequin rasbora (*Rasbora heteromorpha*), clown loach (*Botia macracanthus*), arowana and sawfish (*Pristis microdon*) is discussed.

KEYWORDS: Freshwater fishes, Southeast Asia, aquarium fish, conservation, biodiversity

INTRODUCTION

Southeast Asia is a conglomerate of continental landmasses and numerous islands, all of which lie within the equatorial belt. The region composed of the countries of Thailand, Malaysia, Indonesia, Singapore, Brunei and the Philippines enjoys year-round warmth, high humidity and light, which has resulted in an environment that is extremely diverse and varied in habitats (Whitmore, 1986). The freshwater fish fauna of this region is exceptionally diverse, and over 1000 species are now recognized (Kottelat *et al.*, 1993; Kottelat and Whitten, 1996) from western Indonesia and East Malaysia (Kottelat, 1994, 1995; Kottelat and Lim, 1995).

It is thus not surprising that the lucrative aquarium trade has been utilizing numerous wild species in Southeast Asia for many years. The number of species which are traded, however, is surprisingly small, despite the large number of species present. Much of the 'official' trade has been with farm-bred species like

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guppies, goldfish, koi, mollies, swordtails and cichlids, none of which are native to the region. While a great deal has been written about the trade of these species, much less is known about the wild fish trade. As with any natural resource, there are several conflicting points of view about using this resource. Economics dictate that the trade should be expanded, with more species and larger quantities exported. Conservationists argue that such a resource should be left alone and conserved while sentimentalists argue that trade of live animals is inhumane and should be banned outright. Reality, however, requires that a compromise be established.

The trade itself is an enormous one. Singapore alone exports S$80 million worth of fish every year, which constitutes about 20% of the world market and it is still growing at 6–7% annually (Ngiam, 1994). While the bulk of this trade arises through the sale of cultured species, an increasing part of it includes the re-exportation of wild-caught fish. It is also generally acknowledged that the actual trade, even for Singapore, is probably several times the official figure. There are few reliable figures for the other countries as well, and official figures are often a gross underestimate of the real total. For Southeast Asia as a whole, we estimate a total trade of S$100–200 million in aquarium fish species.

The present paper is an attempt to place some perspectives on the booming regional aquarium trade in wild fish species. We will focus on an overview of the trade, the problems faced and the practical conservation issues on hand which must be dealt with squarely. We will also look at a few key species which are currently important for the trade, mistakes which have been made in the past, and potential for the trade and common misconceptions about it, and we shall offer suggestions on how this resource can be managed sustainably. The present observations and suggestions are based on many years of working closely with fish catchers, dealers and exporters in the region, not only on a scientific but also at the fisheries level. There is so little published information that we feel that it is imperative that some of these observations be put on paper.

SPECIES IN THE TRADE

The wild-caught species currently traded can be approximately divided into three categories on the basis of how important they are to the trade. The classification presented here is based on the authors' experiences.

Category I are the so-called 'bread-and-butter' species, those which are very popular in the trade and are caught and exported in large numbers. Examples of wild-caught bread-and-butter species from Southeast Asia are the clown loach (*Botia macracanthus*), eel-loaches (*Pangio* spp.), chocolate gourami (*Sphaerichthys osphromenoides*), pearl gourami (*Trichogaster leerii*), harlequin rasbora (*Rasbora heteromorpha*), flying fox (*Epalzeorhynchus kalopterus*), apollo shark (*Luciosoma setigerum*), two-spot catfish (*Mystus bimaculatus*) and glass catfish (*Kryptopterus bicirrhis*).

Category II are wild-caught species which are traded occasionally and/or in small numbers at the moment, but with a good potential for their increased popularity and export. Examples are the pygmy rasbora (*Boraras maculatus*), neon danio (*Rasbora axelrodi*), Hasselt's goatfish (*Osteochilus hasseltii*), glowlight

rasbora (*Rasbora pauciperforata*), graceful rasbora (*Rasbora gracilis*), Hengel's harlequin rasbora (*Rasbora hengeli*), kalbar rasbora (*Rasbora kalbarensis*), red rasbora (*Rasbora reticulata*), six-banded tiger barb (*Puntius hexazona*), zebra barb (*Puntius gemellus*), eyed tiger barb (*Puntius rhombocellatus*), eight-banded barb (*Eirmotus octozona*), filamentous glassfish (*Gymnochanda filamentosa*), fire-eyed loach (*Barbucca diabolica*), swamp loach (*Neohomaloptera johorensis*), Hasselt's loach (*Lepidocephalichthys hasseltii*), Bornean clown catfish (*Leiocassis mahakamensis*), black lancer (*Bagrichthys macracanthus*), marbled lancer (*Bagroides melanopterus*), brown clown catfish (*Pseudomystus fuscus*), marbled glass catfish (*Kryptopterus macrocephalus*), glass catfishes (*Pseudeutropius* spp.), wrinkle-belly catfish (*Glyptothorax major*), red dragon eel (*Mastacembelus erythrotaenia*), fighting fishes (*Betta* spp.), licorice gouramies (*Parosphromenus* spp.), dwarf snakehead (*Channa gachua*), sakura snakehead (*Channa melanoptera*), emerald snakehead (*Channa pleurophthalma*) and freshwater pufferfish (*Carinotetraodon, Chonerhinos, Tetraodon* spp.).

Category III species are those which are very expensive and cater for the 'high end market'. Species in this category include the arowana (*Scleropages formosus*), reg-flag giant gourami (*Osphronemus laticlavius*) and sawfish (*Pristis microdon*).

It is important to note that in addition to foreign species (such as guppies) which are now cultured, a number of native species have also been so exploited. These include the Siamese fighting fish (*Betta splendens*), kissing gourami (*Helostoma temminckii*), three-spot gourami (*Trichogaster trichopterus*), bala shark (*Balantiocheilos melanopterus*), scissor-tail barb (*Barbodes altus*), tiger barb (*Puntius tetrazona*), pygmy loach (*Botia sidthimunki*), walking catfish (*Clarias batrachus*) and giant catfish (*Pangasius sutchi*). Most of these species have been selectively bred over the years with the result that there are now a large number of different varieties of each.

OVEREXPLOITATION

There are several well-publicized examples of severely overexploited species, e.g. the bala shark, arowana and harlequin rasbora. Some of them had been overfished to the extent that they have become locally extinct. The classic case must surely be that of the bala shark. We will now look at the fishery history of five species.

Bala shark (*Balantiocheilos melanopterus*)

The bala shark was once abundant in Sumatra and Kalimantan, and was a classic Category I species. Despite its simple coloration, it became very popular all over the world as an aquarium fish about 20 years ago. This popularity resulted in severe overfishing which effectively exterminated the wild populations. The wild population in Sumatra was wiped out about 15 years ago, according to local fish dealers in Sumatra. It may well be extinct in other areas.

The species became so popular that it became one of the most important species in the trade. In addition to extensive and intensive collections in the various drainages where it was known to occur, the collectors apparently also discovered the breeding grounds. The bala shark, like many riverine cyprinids, apparently migrates to reach specific breeding grounds where it undergoes mass

spawning (Roberts, 1989). This species reaches sexual maturity at about 10 to 15 cm, although it can reach 25 cm in length. All sizes which could be marketed were harvested, including juveniles and adults up to 15 cm in length. The collections thus took a serious toll not only of the juveniles but of breeding adults as well. This species also happens to be a relatively delicate species, being 'jumpy' and easily excitable (pers. obs.). Their fishery thus often results in high mortalities. That the species is relatively short-lived means that regular large collections of specimens for the trade are necessary, and that capture of breeding individuals has very serious consequences for the population. These factors, together with collections even when it was reproducing at its breeding grounds, resulted not surprisingly in a sharp drop in its numbers after a few years. Undoubtedly, deforestation was also partially to blame, but the key factor which led to its demise must surely be overfishing.

The species has had a 'second chance' because fortunately, wild populations in Thailand were still intact. Although the wild populations in Thailand are dwindling, the species has been bred in captivity, with the stock derived mainly from captive Sumatran fish (pers. comm. with fish dealers). The success of captive breeding has meant that the trade in this species (which remains very popular) is today based almost entirely on cultured fish.

Clown loach (*Botia macracanthus*)

The clown loach is one of the most popular fishes in the trade and is a clear Category I species. Juveniles are found in abundance in the large rivers of central Sumatra, west Kalimantan and central Kalimantan during the high-water seasons. The adults breed at the beginning of the high-water season and locals catch the young soon afterwards. This is the only time in the year when the fish is caught. At other times, the individuals are too dispersed or too large to be of value to the trade. The size range preferred by aquarists is 3–8 cm. Larger specimens tend to be more carnivorous and do not fit in well in community tanks (Hammond, 1996). Adults can attain lengths up to 40 cm. The most commonly marketable length range is 2–4 cm, with the optimum at around 2 cm. This is because it is at this size that most individuals are caught as they come downstream from the breeding grounds upriver. At this size, they are also easier to maintain in captivity and are easily fed with available fish feed.

The current trade in this species is estimated to be about 20 million pieces (specimens) exported annually. According to a major dealer in Sumatra, handling up to one million pieces annually for one dealer is common. It is important to note here that while the minimum breeding size of this fish is about 20–30 cm, the trade is interested only in much smaller individuals. The fishes caught are therefore basically juveniles, and breeding populations are left intact. This is possible also because the current methods for catching these fish (see later) pre-select for the sizes to be caught. The breeding grounds are not yet known, and even if discovered, it is unlikely that there will be any fisheries directed there as the individuals would be too large anyway. In any case, Indonesia has imposed a ban on the export of specimens longer than 10 cm. This ban not only protects breeding adults, but also makes the captive breeding of this species by external agencies more difficult.

Some dealers now culture clown loaches. Often, fishermen are able to trap individuals smaller than 2 cm. These are cheap and too small to be marketable, but if they are grown out, a profit of up to 300% or more can be realized if a juvenile of 1.5 cm is raised to 3 cm. Juveniles exhibit astonishing growth rates. A doubling in size is discernible within a week, if sufficient food, adequate aeration and filtration are provided. Some exporters also keep excess stock to grow out and sell later when the fish is not in stock and prices are higher.

Collection of *Botia macracanthus* is slightly different in Borneo and Sumatra. In Sumatra, *B. macracanthus* is caught by using perforated bamboo poles stuck into the river bank substratum (Fig. 1a). The perforations are situated just below the nodes of the bamboo pole, and the size of the perforation determines the occupant size. To obtain fish of a certain size range, the correct perforation size is made. The collector sticks these poles at regular intervals of about 1 m in the river substratum. During the peak season, the collector will collect at regular intervals by lifting the whole pole out and pouring out the contents into containers or directly onto the boat's bottom, which is filled with water (pers. obs.). Later, the catch will be sorted and transferred into holding tanks, before they are sold to a middleman. In Borneo, a variation of the above-mentioned technique is used. A bundle of trimmed and split bamboo poles of a pre-selected diameter is tied together and sunk with stones (Fig. 1b). The bundle is attached with a rope that is tied onto stakes driven into the river substratum or onto overhanging bankside tree branches. Fish will take refuge in and amongst the bamboo poles. The collector lifts up the whole bundle and shakes out the refugees into a container (pers. comm., M. Kottelat). This technique is somewhat

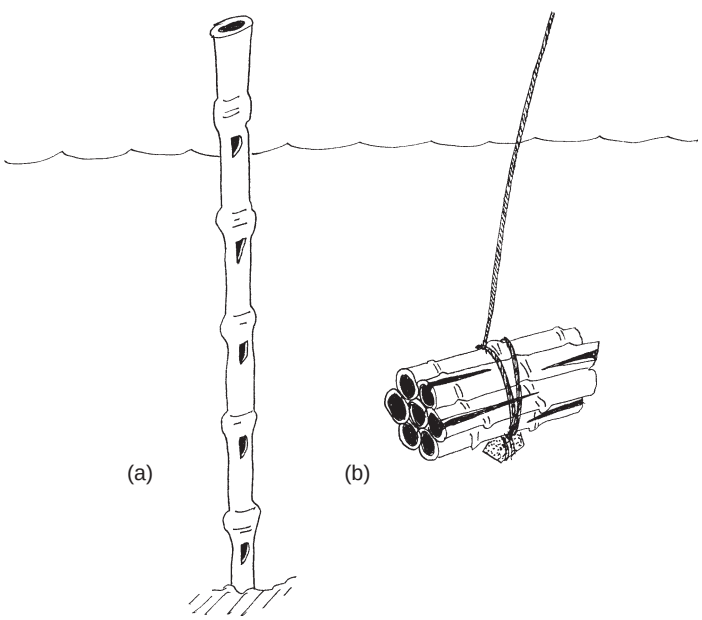

Fig. 1. Schematic diagrams of (a) Sumatran and (b) Borneon methods of catching *Botia macracanthus*.

more stressful to the fish, as they are shaken out. The technique used in Sumatra merely requires pouring out the contents and inflicts less stress and harm on the fish.

The clown loach has been heavily exploited in Sumatra and west Kalimantan for the last 30 years now, but can still be found in good numbers in the wild. The reasons, as mentioned earlier, are mainly the nature of the fisheries and the market, and to a lesser extent the government guidelines which control its trade.

In central Kalimantan, the exploitation of *B. macracanthus* is not as heavy and the locals catch adults for food (pers. comm., D. Siebert). Specimens from Sumatra can be discerned from the Kalimantan specimens by the fish exporters. The overall colour is subtly different between the populations. Sumatran specimens generally have a silvery sheen over the body, whereas the Kalimantan specimens have a more intense reddish coloration. This could, however, be due to the habitat: Sumatran specimens inhabit murky water rivers, whereas the Kalimantan ones prefer brown water rivers or even black water tributaries. The dissolved tannins and humic acids in black water tend to accentuate their reddish colours.

Captive artificial breeding of *B. macracanthus* is possible and has been accomplished by the Thais. However, it is still not cost effective to captive breed them, with the wild-caught stock being much cheaper. The species has some unusual breeding characteristics (Hammond, 1996) and it is not one of the easiest fish to breed in any case. The culture for this species must be developed to make it commercially viable in order to take pressure off wild stocks. The trade must have enough foresight to counter the inevitable extirpation of wild stocks. If the technology is not developed in advance, then the whole species may face extermination by unscrupulous fishing methods, and more worrying, habitat destruction.

Harlequin rasbora (*Rasbora heteromorpha*)

The harlequin rasbora is found in abundance only in swamp forest habitats in Peninsular Malaysia and the northern half of Sumatra. It is a Category I species, commanding a reasonable price but often in large numbers. The species has been popular in the trade for many decades and is ideal for community tanks.

The collection of this species in the swamp forest is a tedious process, because the specimens are literally scooped out individually or in groups. Although this is a schooling species, the dense vegetation and uneven terrain of the swamp forest makes collection generally difficult. However, this species has been found to occur in more disturbed areas, e.g. Pulau Bintan, where shoals can be scooped out in large numbers (pers. obs.). Fortunately for the trade, but unfortunately for the fish, locals (often children) love to spend their spare time catching fish and earning some pocket money at the same time. Middlemen seek out eager helpers to collect harlequin rasboras and pay by lots of a hundred or per piece. These specimens are collated and collectively sold to the fish dealer. During a major harvest, in excess of 100 000 pieces can be obtained within a week (pers. obs.). This fish is easier to catch during the low-water season when the fish population is concentrated in shallow pools. This is in sharp contrast to the fisheries for the bala shark, arowana and clown loach, which are

predominantly fished from large rivers, requiring boats and at least some expertise at fishing.

The endurance of this species in the trade, despite extensive collecting efforts, is due in no small part to its extensive distribution and difficulty in collecting them en masse like other species. Even as schooling fish, harlequin rasboras are not present in huge numbers. That the species is still extant, even abundant in some places, means that the current fishing practices are sustainable. As will be noted later, the primary fishing period for this fish is during low-water periods when the fish are accessible. Shortly after this period, the populations often collapse in any case due to a shortage of water. For this species, we anticipate that the rapid loss of forests (especially swamp forests) will pose the greatest threat to its survival, not the aquarium trade as it now stands.

Arowana (*Scleropages formosus*)

The arowana is widely distributed in Southeast Asia – Cambodia, Vietnam, Thailand, Peninsular Malaysia, Sumatra and Borneo (Kottelat *et al*., 1993). There had been local extirpation of *Scleropages formosus* in some drainages in Peninsular Malaysia and Sumatra due to over-collecting, but is still relatively common in some areas (Anon., 1986). This species has all the features of a Category III species – high value, high demand, relatively high initial abundance in the wild. Its biological attributes (low fecundity, oral-brooding habit and being an open-water spawner), however, make it a prime candidate for overexploitation and possible extinction.

Unlike the market for the bala shark, that for the arowana is somewhat different. The high cost of each fish, even juveniles, means that it is not a species which is exported in large numbers or to average aquarists. For many years, the arowana was only occasionally seen in the aquarium trade and the species appeared regularly in markets as a relatively cheap food fish! Its sudden popularity was basically an Asian phenomenon. In the late 1970s, Chinese superstitution had it that keeping this fish gave its owner good luck and prosperity. This belief probably partly arose by chance and partly because of the bright red and deep gold colours of some arowanas, which Chinese and Japanese associate with luck. Suddenly, people (especially businessmen) were paying incredible prices to own an arowana so as to have a good luck charm. In the west, the Southeast Asian arowana (and the South American species) are much less popular, although they appear in the trade occasionally.

The relatively smaller market and much higher individual price of each specimen has meant that the stocks of wild arowana had been less stressed over the short term. Also important is that the arowana individuals are territorial and are dispersed over a wide area, making their collection difficult. Neither do arowanas migrate or congregate when breeding, thereby reducing risks to their populations. In addition, arowanas are relatively long-lived fishes, often adapting well to captivity, and are usually kept in solitary tanks. The turnover of arowanas is thus small compared with that of species like the bala shark. Concurrent with the rapid development of the trade of the arowana, of course, was the early realization that the fate of the species might be threatened, especially considering its reproductive biology. This resulted in the species being placed on the CITES list of protected species in 1980. Although CITES is usually ineffective in

many areas, it nevertheless served to restrict the trade, and most countries have tried to curtail the trade, even if it is often at face value only.

The large size, mouthbrooding behaviour and high price of arowanas have also spurred efforts for their culture relatively early. In the Kapuas area in west Kalimantan, Indonesia, large farms have been established where the arowana is successfully being bred (Kottelat and Whitten, 1996). Under CITES guidelines, once an endangered species can be bred in captivity, applications can be made for its trade to be allowed on a controlled basis. In Singapore, the successful spawning of the second generation of *S. formosus* by Rainbow Aquarium Pte Ltd and the Primary Production Department (PPD) of Singapore has also led to the controlled sale of this species. The use of microchip implantations into these Singapore offspring aids in the identification of legal stocks in the trade (Dawes and Cheong, 1994). However, wild-caught specimens still command good prices (depending on the colour variety) and are in high demand, until at least captive-bred stocks can meet demand. There is still an extensive illegal trade (Joseph *et al.*, 1986; pers. comm. with fish dealers). The prices of the different colour varieties of *S. formosus* differ greatly. The red and gold varieties can cost from five to 10 times more than the green or normal variety (pers. obs.).

It is also important to put issues in perspective. Ten years ago, ad-hoc attempts at captive breeding of arowanas were generally viewed with scepticism. Time, technology and dedication of fish breeders have made captive breeding a reality; it is currently heading towards the stage of full commercialization of breeding arowanas in farms. Perhaps in 10 years time, there will be no need for the harvest of wild stocks, except perhaps for the occasional specimens to supplement captive stocks to improve their genetic composition. There are also problems with the taxonomic status of *S. formosus*. The different colour varieties may well represent different species, but there are insufficient preserved specimens with good data for the necessary comparisons. The high price and CITES status of *S. formosus* also hinders further taxonomic work.

Sawfish (*Pristis microdon*)

Pristis microdon is one of the rare elasmobranchs that enter fresh water, but has a wide disjunct distribution pattern (Kottelat *et al.*, 1993). It is found only in large rivers, lakes near the sea and near river mouths. It is reputed to grow up to 6 m long (Rainboth, 1996). Normally only juveniles will enter rivers, but adults have also been obtained upriver. However, the frequency of catches has decreased due to extensive use of gill nets (Rainboth, 1996).

Only juveniles are caught for the trade and quantity is very limited due to the seasonal availability of this species (pers. obs.). The ones found in the trade are generally shorter than 1 m and are usually for public aquaria. So far only a dozen juvenile specimens had been encountered in the past five years (pers. obs.). This species commands a high price and the markup value after each re-sale is a minimal 100%. The high value, high demand, slow growth and low fecundity for this oddball species makes it vulnerable to overfishing. This had led to a severe reduction of wild populations, and currently this species is under consideration to be listed under CITES I (Cook and Oetinger, 1996).

SUSTAINABLE HARVESTING OF WILD STOCKS

It is our opinion that freshwater fish can be sustainably harvested, unlike some other vertebrates, as long as sufficient tracts of their natural habitat (including the breeding grounds) are conserved. This is in part owing to the nature of fishes and their habitats.

Annually, two phases occur in the wild – growing and collapse phases (Goulding, 1989). Typically, the growing phase is just after spawning during the high-water season and juveniles are plentiful. This phase is vulnerable to both inter- and intraspecific competition and predation. This is the phase in which certain species can be harvested with less immediate and direct impact to the long-term survival of the population, e.g. in the clown loach. There is also usually a 'population collapse' phase which typically occurs during the dry or low-water season. This is the phase in which many individuals die out due to lack of water and other resources. This is a particularly appropriate juncture to harvest, not only because many of the fish will die anyway, but also it is relatively easier for fishers with the waters being low. Most species of tropical freshwater fish are not annual fish, and the typical life span of the smaller fish is anywhere from 2 to 5 years or more. Therefore, collecting fish during the collapse phase, while benefiting the trade and hobbyists, is not anticipated to have much impact on the population of the species. Its effect on the ecosystem, however, is less clear, but we doubt if the impact is very great considering the small size of the fish and the many other non-aquarium species involved. We believe that as long as the fisheries of selected species are coupled with proper harvesting techniques, high mortality rates and the threat to the survival of the species can be avoided, e.g. in the harvest of the clown loach. When decisions need to be made on how fisheries can be made sustainable, it is important to be more clinical and management-orientated on the threats faced by each species and the nature of the trade. From the examples provided of the bala shark, arowana, clown loach and harlequin rasbora, it is clear that the trade and conservation of each species differs. Conservation and fishery practices must thus be specifically tailored to deal with each set of problems.

It is also important to note here that the sustainable utilization of aquarium fish resources is an important factor to include when forest conservation in general is considered. The economic value of conserving forest systems usually involves calculations of forest products and by-products, almost always leaving out the value of aquarium fish (Peane and Moran, 1994). This sustainable by-product of an intact forest can add substantially to the overall calculations.

The morality of the trade is another question altogether. Care is increasingly been taken to minimize mortality in wild-caught fish and substantial progress is being made. The actual catching process has improved over the years, and middlemen are increasingly emphasizing to their catchers that good-quality fish are needed. Gone are the days when only numbers mattered. The nature of the aquarium market today (especially in western countries and Japan) is that high-quality fish are wanted, even if prices are somewhat higher. With improved catching methods has also come the realization among many dealers that wild-caught fish must be acclimatized before export. This is to ensure a high

percentage of survival on arrival. Concurrent with this is improvement in packing technology, which allows high stocking densities for longer periods. This involves not only technology and water quality but more knowledgeable use of appropriate anaesthetics and chemicals. Freshwater fish in general are not very fastidious and are relatively easy to acclimatize, so long as one critical detail of its place of origin is known – habitat type. As an example, fish from peat swamp habitat should be acclimatized in water pretreated with peat or a local equivalent (e.g. dried leaves of *Terminalia catapa*) to make it sufficiently acidic. The transit of fishes through right channels also decreases the time between packing and unpacking on arrival at its destination. The improvement in transport arrangements and choice of export point (e.g. which airport to use) are very important considerations.

CONCLUSIONS

In Southeast Asia, Singapore currently has a well-developed infrastructure and logistical support for the export of aquarium fish. Along with proper packing of the shipments, with advanced materials used for selective permeability, optimal packing can be achieved and thus maximal profit. The official trade in Singapore is S$80 million a year (Ngiam, 1994). In the Southeast Asia region, the total official trade is S$100–200 million, but as noted earlier, the actual figures may well reach S$300 million. How much of this is represented by the wild-caught fish trade is not known but is generally acknowledged to be quite substantial. We have observed in many cases that fishes exported which were supposedly 'bred in captivity' were actually caught from the wild.

At the moment, captive breeding of certain species is simply not economical, with wild-caught populations far cheaper. Certain species are no longer collected from the wild, as the captive stock has been successfully bred and are now mass produced, thus very cheap. Examples are *Trichogaster trichopterus* and *Puntius tetrazona*. Different colour varieties of *Trichogaster trichopterus* are readily available from the market at affordable prices. The moss-green variety of *Puntius tetrazona* had been developed by Singaporean breeders and a variety of colour forms are available.

Deforestation is probably the main reason why fishes and many other organisms (both faunal and floral) are now endangered (Ng, 1991, 1994; Ng *et al*., 1992, 1994). Sustainable harvest of wild populations is possible, if the managers and government officers have sufficient knowledge and foresight to preempt disasters. There are certain fish dealers who only collect a limited number of specimens and fully acclimatize them before sale to customers overseas. The trade and hobby should be geared towards healthy fish, rather than high-volume but low-grade fish; and towards sustainable harvest and captive breeding. This, we believe, is good for the trade and hobbyists, and will also help the cause of habitat and species conservation in general.

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