
История малакологии¹ History of malacology

Russian contributions to the international Tropical Marine Mollusc Programme (TMMP), 1999–2003

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The international research and educational programme, Tropical Marine Mollusc Programme (TMMP) was funded by Denmark from 1990–2004. This paper summarizes when and how the Programme saw the light of day. Two gastropod species *Chicoreus ramosus* (L., 1758) and *Charonia tritonis* (L., 1758) were selected as target species. In the beginning, research had emphasis on applied and commercial aspects, but basic science became more prominent after 1997, and especially in the years from 1999 and onwards, after Russian researchers joined the TMMP. I refer to the difficult task of being editor of the Proceedings, which were issued after each conference and workshop. The Russian contributions to congresses, training courses, and workshops in Vietnam, Cambodia, and India are reported and activities illustrated.

Российский вклад в международную Программу по тропическим морским моллюскам (TMMP), 1999–2003

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Международная научно-образовательная Программа по тропическим морским моллюскам (англ. аббревиатура – TMMP) финансировалась Данией в 1990–2004 гг. Настоящая статья описывает, когда и как программа увидела свет. Два вида брюхоногих моллюсков – *Chicoreus ramosus* (L., 1758) и *Charonia tritonis* (L., 1758) были выбраны как «целевые» виды для программы. В самом начале программы, исследования были направлены на прикладные и промысловые аспекты, но фундаментальные вопросы малакологии стали рассматриваться как наиболее важные с 1997 г., и особенно с 1999 г., когда к программе присоединились российские исследователи. В статье освещены редакторские проблемы в связи с изданием трудов, которые выходили после каждой конференции и рабочего совещания. Описан и проиллюстрирован российский вклад в проведение конгрессов, школ и совещаний во Вьетнаме, Камбодже и Индии.

¹ Редколлегия «Бюллетеня Дальневосточного малакологического общества» вводит новый раздел «История малакологии», где будут публиковаться статьи по истории развития науки, биографии выдающихся малакологов, сведения о важнейших исторических коллекциях и др. (ред.).

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Йорген Хиллеберг – почетный профессор и доктор (Doctor Honoris Causa), бывший директор международной научно-образовательной Программы по тропическим морским моллюскам.

Background of TMMP

The Tropical Marine Mollusc Programme (TMMP) was made possible because the Ministry of Foreign Affairs in Denmark had established a section named Enhancement of Research Capacity (ENRECA) under the Danish aid programme DANIDA. Thanks to this decision, it was possible to apply for funding of mollusc research in the tropics, but we needed a target species and partners to cooperate with.

I had served the Phuket Marine Biological Center (PMBC) in Thailand as advisor and consultant since 1979 so I had much experience with the tropical

fauna and I had a good working relationship with the head of the Reference Collection Dr. Anuwat Nateewathana. I discussed the prospects of funding with him in 1990 and he suggested that we made the common gastropod *Chicoreus ramosus* (L., 1758) target species with a view to demonstrate the commercial potential of this species. We knew that this muricid was used in Chinese cuisine and it had a number of qualities both in terms of human nutrition and aquaculture. In spite of many good characteristics *C. ramosus* was not exploited at any noticeable level in Thailand.

Culture of *Chicoreus ramosus*

It was DANIDA's policy to let ENRECA support projects with an applied aspect so we decided to put emphasis on aquaculture starting with egg laying, hatching, food and feeding of veligers, settling, and growth of juveniles summarized by J. Nugranad et al. [1994]. We also wanted to present a complete cost benefit analysis to show if culture would be feasible [Steenfeldt, 1992]. In order to achieve all these goals, we had to start from scratch with a many studies of basic science since very little was known

in terms of life history of this species. Actually, the lack of basic knowledge was so pronounced that the TMMP ended up dealing more with basic than applied aspects of molluscan life. Obviously it is impossible to carry out applied science without basic science to apply! Steenfeldt [l.c.] showed that traditional culture of *C. ramosus* to adult size was not feasible. However, Nugranad and Kerdpoom [1995] showed that juveniles grown for a period of six months had a commercial potential.

The first years of TMMP

By late 1990, we had a target species and a first partnership was established so the conditions for applying funds from DANIDA were present. We submitted a proposal and were funded for half a year. DANIDA considered this a test period where we had to provide evidence to

show justification of a full-fledged Tropical Marine Mollusc Programme. We sent a letter to Dr. K. Ayyakkannu, Annamalai University, Tamil Nadu, India, asking if he would be interested in joining the programme. The answer was prompt and very positive.

Now the partnership involved the three countries, Denmark, India and Thailand, and our chances of long-term funding had improved. Participants met in Phuket to conduct the first Workshop on 12–18 August 1991 (1991 Proceedings, vol. 9 – see **List of the TMMP Proceedings** after **References** section). The second workshop was conducted in India on 4–14 May 1992 (1992a Proceedings, vol. 10).

Our aims were to show that we cared about the commercial aspects, but we also wanted to show our deep interest in basic studies of molluscs. We put emphasis on basic research because we searched for

a deeper understanding of structure and function, both of individuals and populations together with their role in the marine ecosystems. Headlines in the 1992a Proceedings (vol. 10) were: **1)** Gastronomy and Nutritive value, **2)** Socio-economy, Shell trade and Markets, **3)** Conservation, **4)** Larval biology, Reproduction and Aquaculture, **5)** Taxonomy, Morphology and Anatomy, **6)** Ecology, Food-feeding and Population biology, **7)** Ecophysiology, **8)** Biochemistry and Pharmacological aspects. These categories were themes which lent themselves to research by participants during the lifetime of the TMMP.

The TMMP expanded over time

Proceedings of the first two workshops were well received by our sponsor and with this evidence at hand DANIDA accepted our proposal for a continuation of the TMMP for a four-year period. Funding was renewed a couple of times until the last congress and workshop was conducted in 2000. The grants were administratively extended so we could finish the last publications of the TMMP in 2004.

From 1991 to 2001, the TMMP grew in terms of cooperating countries and

resource persons. We had 18 participants from 4 institutions at the start in 1991 and ended having 95 participants from 17 countries at the concluding congress in 2001. In 1993, Indonesian researchers from four universities joined the TMMP. Researchers from Vietnam and Cambodia joined the TMMP by resource persons in 1997 and as complete participants in 1999 (2000 Proceedings, vol. 21(1) p. 311 and 313).

Focus on the ranellid *Charonia tritonis*

Two Indonesian teams on the island Sulawesi wanted to initiate studies of the large gastropod *Charonia tritonis* (L., 1758). However, the populations had become so small that they had to scrap the plans (1994 Proceedings, vol. 13, p. 239). Work with molluscs had to change to encompass a variety of other species (1995 Proceedings, vol. 15, p. 237).

Work on breeding of *C. tritonis* was reactivated in Thailand, partly based on

four live snails imported from Indonesia via a TMMP co-worker. It turned out that reproduction and raising of the larvae could be completed without major difficulties. Ms. Jintana Nugranad did the work in the Prachuap Khiri Kahn Hatchery in Thailand and about 100.000 veligers were released in the Andaman Sea in 2000 (2001 Proceedings, vol. 25(1), p. 283–284). Ms. Jintana had raised the larvae for more than five months (2001 Proceedings,

vol. 25 (1), p. 153–160) but it was impossible to get them to metamorphose. We believe the lack of metamorphosis is explained by a very long pelagic life as

reported for some species in the family Ranellidae. Since the rearing tanks were needed for other species she was forced to release the veligers.

Problems with the Indian cooperation

The cooperation with Annamalai University was irreversibly terminated on 15 November 1997 because Prof. Ayyakkannu had cheated with respect to spending of available funds. As a result, we stopped the cooperation with Annamalai University and switched to a newly established facility: Suganthi Devadason Marine Research Institute (SDMRI) in Tuticorin, southern India from 1998 (1999 Proceedings, vol. 19(1), p. 269–270). This action turned out to be a rewarding decision.

In addition to the financial misconduct, Prof. Ayyakkannu had failed to check work of one of his senior research fellows, Ms. C. Stella. Unfortunately, two

erroneous papers by Ms. Stella were published before we discovered the nonsense [Stella, Ayyakkannu, 1992; Stella et al., 1992]. She copied literature illustrations of soft parts of *Littorina* and claimed the figures to show anatomy of *Chicoreus* (1992a Proceedings, vol. 10, figs. 1 and 2, p. 123–127 and figs. 12,3 p. 132–134). We regret to have missed discovery of this act before publication. However, the erroneous information was rectified the same year in 1992b Proceedings, vol. 11, p. 53. In consequence, she left the programme by the end of 1992. Correct anatomical details of *C. ramosus* were subsequently published by P. Middelfart [1992] (1992b Proceedings, vol. 11, p. 66–71).

Challenging work being editor

In capacity of editor, I had to provide manuscripts ready to print with illustrations and covers in place. It was necessary to do this in order to reduce the cost of publication and it worked well in most cases. However, it turned out that printer's errors could happen as a result of this ready-to-print procedure. The printing machinery could completely alter the sense because the associated computers changed the text. It was critical when Greek characters and mathematical formula should be reproduced, e.g., in the paper by Simonsen and Kittiwattanawong [1998] (1998 Proceedings, vol. 18(2), p. 223–236). We

rectified the mistakes in the 1999 Proceedings (vol. 19(1), p. 11). In order to avoid this kind of mistake, I scanned all formula and pasted them as jpg pictures in the manuscripts ready to print. Pictures were never changed by the printing machinery.

Further, I did not take into account that the computer of the printing house could produce garbled text because I used a dictionary which differed from the one in the printer's computer. It happened in many cases (2000 Proceedings, vol. 21(1), (2)). The explanation and errata were printed in the 2001 Proceedings (vol. 25, p. iv).

Russian contributions in Vietnam

The last addition of researchers to TMMP took place in 1999 when the number of resource persons increased. We were especially happy to get acceptance from Dr. Konstantin Lutaenko (taxonomy of bivalves) and Dr. Yuri Kantor (anatomy of gastropods). In consequence, we had to change our logo one more time to include Russia (Fig. 1). The two researchers added highly needed expertise to the TMMP in these fields. They both presented research

to the audience of our congresses and they were eagerly teaching participants in the workshops and excursions (Figs. 2–8).

Dr. Lutaenko presented two papers in 1999 dealing with Russian contributions to studies of Vietnamese bivalves [Lutaenko, 2000a, b]. Dr. Kantor presented his findings with respect to general gastropod evolution in the 2000 Proceedings, vol. 21(1), p. 264 [Kantor, 2000].

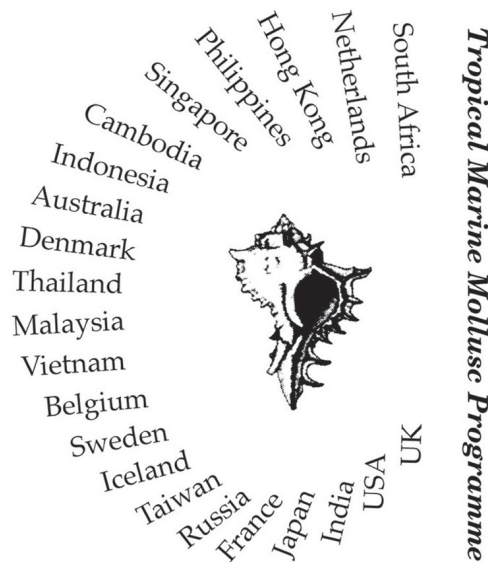


Fig. 1. The TMMP logo as it appeared in the Proceedings from 2000.

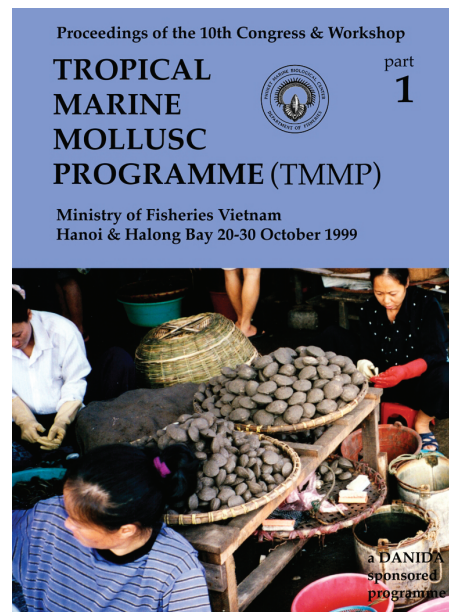


Fig. 2. Cover of the 10th TMMP Proceedings, Part 1. It shows fish market with bivalves for sale. Many species of molluscs were collected in the Halong Bay area for local consumption or export to China.

Russian contributions in Cambodia

The TMMP activity in Cambodia encompassed of a training course (Fig. 9) and a field trip in 1999. The Cambodians were happy for our assistance to their young scientists who lacked equipment, literature, and experience. Dr. Yuri Kantor

made a personal effort to provide a highly needed microscope, which he carried all the way from Russia via Vietnam to Cambodia (Fig. 10). The training course was a success and the trainees very eager to learn (Figs. 11, 12).



Fig. 3. Participants and teachers at the opening of a training course in biodiversity of molluscs of Vietnam, 1–7 November 1999. Seated in the second row from the left are Mrs. Karen Hylleberg, Dr. Kantor and Dr. Lutaenko.



Fig. 4. Training course in biodiversity. Dr. Kilburn (left) and Dr. Tursch (right) discuss the size of a shell.



Fig. 6. Training course in biodiversity. Dr. Kantor explains anatomical features and how to dissect the radula of gastropods.



Fig. 5. Training course in biodiversity. Dr. Nguyen Chinh explains how to identify a species of *Turritella*.



Fig. 7. Resting teachers during field work at the 10th TMMP Workshop in the Halong Bay area. From the left are Dr. Tursch (Belgium), Dr. Kilburn (South Africa), Dr. Hylleberg (Denmark) and Dr. Kantor (Russia).



Fig. 8. Field trip to Halong Bay during the 10th TMMP Workshop. Local ships were used for island-hopping.



Fig. 9. Biodiversity of molluscs of Cambodia, 8–14 November 1999. Participants and trainees present at the TMMP training course in Sihanoukville.



Fig. 10. Dr. Kantor carried a dissecting microscope all the way from Russia to Cambodia via Vietnam. It was donated to the local Reference Collection in Sihanoukville at the end of the training course. It was the first microscope available for Cambodian students of marine fauna.



Fig. 11. Dr. Lutaenko explains shell characters to participants in the training course in Sihanoukville.



Fig. 12. Dr. Anuwat Nateewathana (center) teaches classification and identification of cephalopods in the training course in Sihanoukville.

Russian contributions in India

The contribution of Dr. K.A. Lutaenko appeared in the 2001 Proceedings, vol. 25(2), p. 465–486 [Lutaenko, 2001]. He revised difficult venerids of the genus *Gomphina* (Fig. 13). Dr. Yuri Kantor was chairperson of the first session dealing with taxonomy, biodiversity, and conservation. After the congress we had a very fruitful field trip to Rameshwaram where

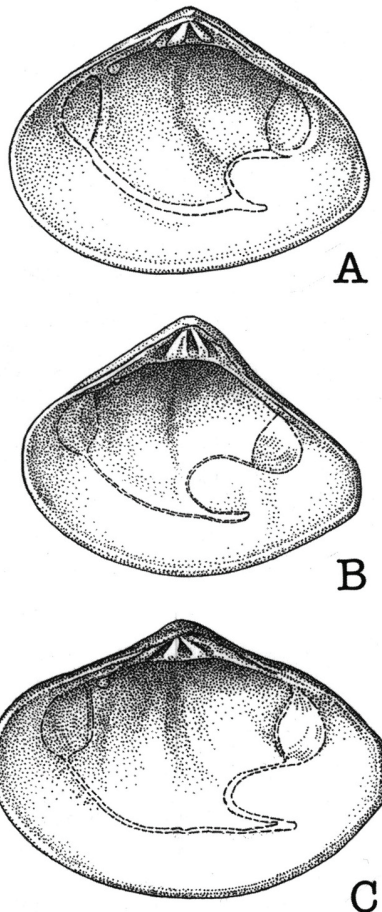
molluscs were collected and identified by participants and resource persons. The activity in India also encompassed a post-workshop at SDMRI in Tuticorin where both Dr. Lutaenko and Dr. Kantor participated as instructors. A paper on the Indian Anadarinae (Arcidae) was published by Dr. Lutaenko based on the collected material in 2000 [Lutaenko, 2006].

Russian contributions to monographs

The TMMP issued two monographs subsequent to the activities in Vietnam in 1999 and India in 2000. One monograph dealt with Indian molluscs (Phuket Marine Biological Center Special Publication,

vol. 28) (Fig. 14). Dr. Lutaenko identified bivalves and Dr. Kantor gastropods.

For the volume on marine molluscs of Vietnam (Phuket Marine Biological Center Special Publication, vol. 28) (Fig. 15),



Text-figure 1. Representations of interior of right valves to illustrate shell shape and position of pallial sinus: (A) *Gomphina* (*Macridiscus*) *sp. (aequilatera* auctt.) (Sea of Japan, Russia, Peter the Great Bay, MIMB no. 1955; shell length 46.7 mm). (B) *Gomphina* (*Macridiscus*) *semicancellata* (Koch in Philippi, 1843) (South China Sea, northern Vietnam; ZISP 10-1962 no. 4; shell length 44.5 mm). (C) *Gomphina* (*Macridiscus*) *melanaegis* Römer, 1861 (Japan, central Hokkaido, Hamamasu, MIMB no. 2028; shell length 51.5 mm).

Fig. 13. Text figure from Dr. Lutaenko's publication in 2001 dealing with the genus *Gomphina*.

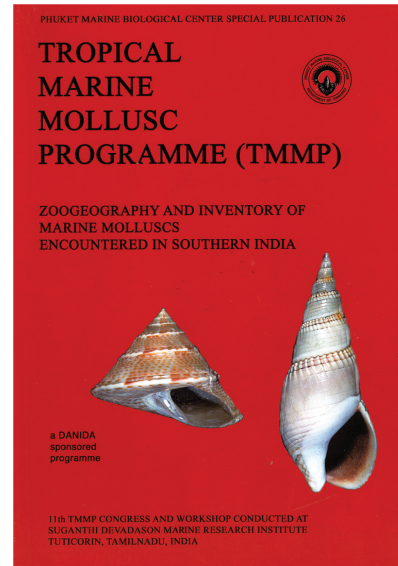


Fig. 14. Marine molluscs in southern India. Cover of TMMP publication, vol. 26 (2002).

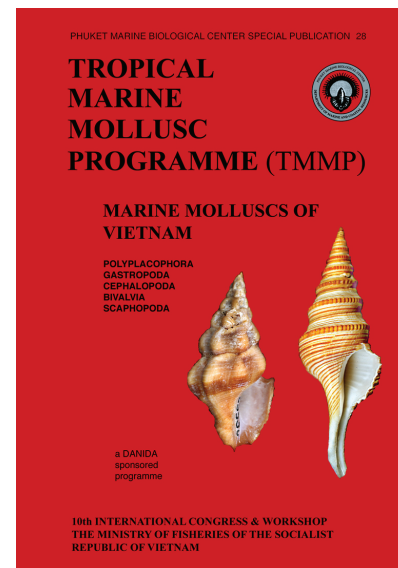


Fig. 15. Marine molluscs of Vietnam. Cover of TMMP publication, vol. 28 (2003).



Fig. 16. *Melo melo* (Lightfoot, 1786) photographed in situ by Oleg Savinkin. The snail has brown shell and black foot with yellow stripes.



Fig. 18. The nudibranch *Hexabranchus sanguineus* (Rüppell et Leuckart, 1830) on coral reef off Nha Trang. Phot. Oleg Savinkin. Det. Kathe R. Jensen.

Dr. K.A. Lutaenko annotated the family Arcidae (p. 146–153) and provided photographs on p. 151. Dr. Yu.I. Kantor had established contact to photographer Oleg Savinkin in Moscow. Examples of his underwater pictures are shown in Figs. 16–18. He had photographed a number of live ma-



Fig. 17. *Conus textile* L., 1758 on coral reef off Nha Trang. Phot. Oleg Savinkin. Det. Yuri Kantor.

rine molluscs on location off Nha Trang in Vietnam. Dr. Kantor identified the molluscs which we used in various Proceedings of the TMMP, and also in the 2003 monograph dealing with Vietnamese molluscs.

Finally, I would like to add that late Dr. A.I. Kafanov (Institute of Marine Biology FEB RAS, Vladivostok) sent me a series of reprints of his studies on cardiids. It was not because he was associated with TMMP but he had studied these bivalves for many years. The reprints were very important when I should finish the last volumes of the TMMP Publications in 2004, viz. *Lexical Approach to Cardiacea*, volumes 1–3 (Phuket Marine Biological Center Special Publication, vols. 29 and 30, 939 p.), concluding DANIDA's funding of this international cooperation.

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List of the TMMP Proceedings

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