

Vjatcheslav Petrovich Shuntov



In his TINRO office, Vladivostok, September 1998.

Dr. Vjatcheslav P. Shuntov is rightfully considered to be an outstanding figure in world fisheries science. Dr. Shuntov has been devoted to studies about different aspects of biological resources and management in the World Ocean. His research interests include ichthyology, ecology, ornithology, squids and whales etc. The number of his published works is so big, that until recently, some foreign researchers had the impression that a group of Russian scientists were working under this pseudonym. He has authored more than 250 scientific papers devoted to ecology, biology and productivity of different fish species, sea birds, sea snakes, whales and dolphins, hydrobiont community structure and their dynamics, waves of abundance, and problems of rational marine fisheries. In the 1960s, Academician A.V. Zhyrmunsky told the story of how two leading specialists from the Institute of Zoology of the USSR Academy of Sciences (now – the Russian Academy of Sciences) argued about who this Shuntov is: one said, “he is an ornithologist”, and the other said, “he is ichthyologist”. This comical situation confirms Dr. Shuntov’s all-round scientific interests and his ability to achieve success in those research issues which he studied.

Dr. Shuntov began working in science in 1959, when he arrived in Vladivostok after graduating from Kazan State University. For almost forty years Vjatcheslav Shuntov has worked at the Pacific Scientific Research Fisheries Center

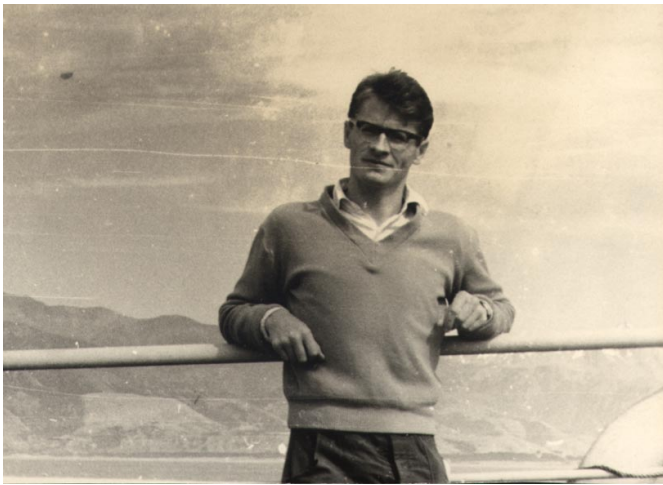
(TINRO-Center, or formerly TINRO). In 1981, he became Professor, in 1995, Academician of the Russian Academy of Natural Sciences, and now he is Chief Scientist at TINRO-Center.

His first steps as a marine researcher were at the Far-Eastern Scientific Fisheries Perspective Research Fleet Base. The young Shuntov landed in the Far East only by accident. The same can be said about his entering marine research, as he spent his childhood far from the sea in the Northern Urals, where he was born in 1937. He became interested in forestry, river and lake landscapes during his student years, when living in Kazan City on the Volga river. Even now, he is emotionally moved when contemplating terrestrial, not marine, vistas.

The first dozen years of Shuntov’s work in TINRO was a time of continuous field expeditions. The 1960s was a period of expansion for the Soviet fisheries throughout the World Ocean, and scientific research vessels led the fishery fleets. In those years, Shuntov was engaged in searching for fish aggregations and new fisheries regions. He carried out special studies on halibut, saury, flying fish, and fish communities in the Far-Eastern seas, in numerous four- to six-month research cruises, in the Bering, Okhotsk and Japan (East) Seas, in Asian tropical waters, around the Australian and New Zealand plateau, and on the oceanic ridges and banks. It is interesting that all of the expeditions he participated in were considered successful, either in the search for new fisheries or from a scientific aspect. Scientific research executed in these expeditions provided information for the gradual expansion of the Russian commercial fishing harvest. These expeditions also made a valuable contribution to the development of scientific understanding of marine biota. In 1976, Shuntov received the Order of the Red Banner of Labour, the highest national award for outstanding services in studies of new fisheries regions.

Dr. Shuntov’s first scientific papers were based on the results of fisheries research expeditions and were devoted to general biology and the distribution of Bering Sea fish fauna. In 1964, after returning from a Bering Sea cruise, he defended his Candidate thesis (equivalent to a Master of Science Degree in North America) on Greenland turbot and arrow-toothed flounder. He was the first to establish that main trophic linkages of commercial fish species dwelling in the continental slope, in particular halibuts, are directly connected to the planktonic communities or through planktivorous fishes. He established one important principle: that halibut can be found on shelf breaks and continental slopes, or where main currents are directed on to the slope zone from the deepwater.

Sea birds became one of the scientific passions of Dr. Shuntov, after seeing them in large numbers on Bering Sea expeditions. Henceforth, he always found time to conduct



As a youth in northern and southern latitudes, aboard the trawler “Zhemchug” in Bristol Bay in 1960 (left) and aboard the R/V “Akademik Berg” near New Zealand in 1965 (right).



sea bird surveys on all his research cruises, despite the pressure of other work or bad weather (he participated in more than 20 sea expeditions). In the early 1960s, he participated in an expedition to the North Vietnam region where sea snakes piqued his interest. With his inherent enthusiasm, Shuntov attempted to determine the sea snakes’ distribution in the South China Sea while continuing the routine ichthyology work of the North Vietnam expedition. It should be noted that the results from the complex research in the South China Sea and the Gulf of Tonkin continue to be valid. The enthusiasm of the young 24-year-old Shuntov and his hard work rightfully gained him the respect of the scientific community. The North Vietnam expedition gave him an opening to regularly study subtropical fish communities. As a young ichthyologist, he benefited from active participation in frequent sea expeditions in different regions (Far-Eastern seas, Southern Ocean). It expanded his biological and oceanographic horizons and gave him an opportunity to look at the structure and functioning of marine ecosystems from different points of view. This proved very useful to him later, when he organized the Laboratory of Applied Biocenology (i.e. Ecology) at TINRO.



Little by little, thousands of marine bird records have been stored from surveys carried out from the Bering Sea to the Southern Ocean, resulting in Dr. Shuntov’s widely cited 1972 generalized work on “*Marine birds and biological structure of ocean*”. For the first time, marine birds were discussed in relation to patterns of biogeographic and biological structures of the ocean. Based on the surveys, the abundance of marine birds in the World Ocean has been estimated to be 1.5 to 3 billion. In 1973, Shuntov successfully defended his Ph.D. thesis based on this book. In 1974, the work was translated into English.

From 1969 to 1983, Dr. Shuntov stopped going to sea due to health problems, and focussed on writing popular scientific articles and books on the conservation and rational exploration of natural resources. He also worked on long-term fluctuations of the Pacific sardine abundance and found that these fluctuations are related to solar activity and climate-oceanological regime shifts. Based on this work, forthcoming sudden increases of Pacific sardine abundance and their dramatic decline were forecast several years before they occurred.

On board TINRO research vessels in the Japan/East Sea, summer 1972 (top) and summer 1997 (bottom).

In 1980, Dr. Shuntov initiated a new program on ecosystem studies of the biological resources of the Far-Eastern seas, which is known in PICES

reports as FES-LIRES (Far-Eastern Seas Living Resources' Studies). His book "*Biological resources of the Sea of Okhotsk*", prepared mainly from archival data, reviewed the results of studies by many other scientists. Numerous scientific questions arose during the review and resulted in Dr. Shuntov's return to sea expeditions. In the 1980s - 1990s, he led seven multi-vessel sea expeditions, and about 30 other expeditions were conducted in the Russian Exclusive Economic Zone by his colleagues who were inspired by his leadership and shared his scientific approach. These interdisciplinary expeditions involved a wide range of meteorological, hydrological, chemical, trawl-acoustic, and planktonic research in the Russian Far-Eastern seas. The distribution, migration, feeding, and physiology of nektonic organisms were also studied. Data on primary production, bacteria, protozoa, and early fish stages were collected, examined, and processed on board the research vessels in some expeditions. In essence, large-scale monitoring was organized to study conditions of the pelagic and bottom hydrobionts' communities in the Russian waters. The support of many specialists in the Laboratory of Applied Biocenology and Dr. Shuntov's skill at co-ordinating a group of scientists to work on solving important ecosystem problems guaranteed the success of all expeditions.

In that period, Dr. Shuntov's experience helped to develop a greater intuition and better understanding of processes and phenomena in the marine environment. Technical advances also made great strides in research by allowing powerful research vessels to tow large-dimension trawls and recover the nets quickly. All the technical advances created the opportunity to carry out calculations of nektonic and nectobenthic organisms during large-scale and complex surveys. A variety of information on oceanological and hydrobiological environments and their dynamics were synchronously collected. Estimations of the food supply state for fish species were possible owing to the availability and wide application of new methods of zooplankton and fish stomachs sample processing.

During a relatively short term, the composition of pelagic and bottom hydrobionts' communities were defined and quantitatively estimated throughout the Russian Exclusive Economic Zone. In particular, it was found that the potential productivity of the Far-Eastern seas was underestimated by previous research due to the method of data collection and processing. A thorough review of the historical data and literature allowed Dr. Shuntov to derive a model for energy and biomass flow through the Bering and Okhotsk Seas' pelagic ecosystems. His colleagues presented this model, at the PICES Scientific Workshop in Seattle, in 1991, and at PICES Okhotsk Sea Workshop in Vladivostok, in 1995. Based on new data, a large-scale regime shift in the climate-oceanological surroundings and biota of the Far-Eastern seas was predicted several years before it happened. For example, as far back as the 1980s, the following changes in the abundance of fish species were predicted: the "pollock epoch" replaced by the "pollock - herring" in the northern

temperate waters and the "Pacific sardine epoch" replaced by the "squid - anchovy" in the southern temperate region.

Based upon a large amount of new information and data on some common fish species collected during the ecosystem studies, Dr. Shuntov, along with his colleagues, wrote and published "Walleye pollock in the Far-Eastern seas ecosystems" and several other articles on the marine life stages of Pacific salmon. Further, they developed a conceptual model of the consequences of the pollock biomass decline in the Far-Eastern seas ecosystem. This model was briefly described in a Russian report at the REX Workshop in October of 1997 (PICES Scientific Report No. 9). It is notable that the differentiation of anadromous Pacific salmon groups migrating to regions of the Far East coast were developed by Dr. Shuntov and his colleagues. At the same time, methods of abundance estimations and terms defining salmon entering the inshore areas were also worked out. Dr. Shuntov resumed marine bird surveys in the 1980s-1990s, during which time whales and dolphins were also recorded.

Despite the considerable number of years spent working hard under a great deal of pressure, Dr. Shuntov always sets aside time in summer or winter, on holidays, to walk many kilometers in the vicinity of Vladivostok. In winter, he feeds the small birds in the forest, and on early summer mornings goes there to hear their hubbub and pipe. In summer, he picks mushrooms, berries and grasses, and goes sport fishing to manage the rhythm of life and cope with the many tasks and problems that are brought daily to him at work. He is a unique asset of TINRO, as one can discuss with him scientific issues, problems of sorrow and grief and ask for worldly advice. In prolonged expeditions at sea, Dr. Shuntov always finds a word, serious or humorous, to support tired colleagues. Once, during some free time in the last months of a strained cruise, he used a deck of cards to tell the fortunes of his colleagues. His lively mind, quickness and gumption allowed him to interpret any card combination in the most optimistic manner. Knowing his colleagues' characters and anxieties, he successfully understood the most sensitive chords of their beings. At the end of the evening all had regained their good spirits.

Since he has been at TINRO, Dr. Shuntov has never said no to a scientist who asked him to be his scientific supervisor. More than 40 Ph.D. theses were prepared under his supervision. "Follow me", and "Only one who keeps going will reach his destination" are the main mottoes that he suggests to people working with him. Just as a squadron leader pilots a team of airplanes in intricate formations, Dr. Shuntov is distinguished among the researchers as a forerunner in his field.

Dr. Shuntov often expressed regret among his colleagues that he did not establish his own scientific school. Of course, he means a "classical" scientific school, where the majority of students, scientists and technicians work under the direct supervision of a leader on the same general objectives.



However, as the situation turned out, Dr. Shuntov's younger colleagues were keenly sought to fill key positions in the fisheries and academic institutions in the Russian Far East and are carrying on research using his scientific principles, approaches and methods.

His zest for life still strong, Dr. Shuntov enjoys playing soccer, where he "works" with younger colleagues. If you see Dr. Shuntov on the soccer field, his place is where the action is, striving to be the victor. Mostly, he plays forward position, or goalkeeper if the regular goalkeeper is absent. It is impossible to calculate the number of goals he has scored during his "soccer career".

Dr. Shuntov has enormous personal charm and intelligence that attracts others to him like a magnet. However, he is a rare guest at meetings or symposia due to his character and depth of scientific understanding. As he says, "he does not fly in flocks". As an individualist and a conservative man, he changes his surroundings with difficulty, except when at sea where he is confident. In new and unaccustomed places he feels emotional discomfort. The lifestyle he has developed during these many years is to avoid scientific gatherings, but to always be aware of new ideas. Administrative appointments and positions proposed to him on many levels are also alien to him. "As an unpretentious hard-worker in science", all his energy is directed towards the realization of his scientific goals. For him reading a large number of published papers (including English papers) replaces the personal contacts with researchers, although, he never denies meeting with a guest visiting TINRO.



Dr. Shuntov's working day begins at 7:30 when he arrives at the institute and continues until after midnight at home. Often he continues to work during holidays and vacations. Despite the rigorous work schedule, he finds time for public activities. He is a member of the editorial board of two leading Russian scientific journals on marine and fish biology ("*Russian Journal of Marine Biology*", and "*Journal of Ichthyology*"), and is a member of two Specialized Councils conferring scientific degrees. He also continues to study marine birds, whales, and squids in his leisure time. He remains a propagandist of scientific knowledge on marine nature and sea animals. Besides his several popular books, for more than 10 years Dr. Shuntov has worked as chief editor of collected papers for a popular scientific series called "*Humankind and the Ocean*". His last popular book is devoted to marine bird "professions" (i.e. ecological specialization) in the World Ocean. He tells about



Dr. Shuntov's favorite outdoor activities: hunting, strolling with his grandson, playing soccer.

the behavior, ecology, and migrations of this animal group, closely related to the sea, with great sympathy and warmth in a fascinating manner.

Regarding future plans for this extraordinary man, Dr. Shuntov is trying to summarize all his work and experience in science. Several years ago he wrote a polemic book of memoirs “Zigzags of Fisheries Science” but has not exhausted this theme. Currently his main task is considering a generalization

of stored knowledge on the Far Eastern seas biota (he has no time or interest to do the same kind of book on the overall Pacific). In late 1998, the first volume of the monograph “Marine birds of the Far-Eastern seas of Russia” was published. At the same time the first volume of a generalized work “Fundamentals of biological productivity of the Far-Eastern seas of Russia” was completed. The following volumes will be put together soon. Going to sea will continue to be Dr. Shuntov’s plan for the future.



With colleagues from the Laboratory of Applied Biocenology at the Pacific Research Institute of Fisheries and Oceanography (TINRO), Vladivostok, May 1995.

This article is written by Drs. Elena Dulepova (indicated on photo by red arrow), Vladimir Radchenko (blue arrow) and Olga Temnykh (green arrow) in appreciation and recognition of Dr. Vjacheslav Petrovich Shuntov’s outstanding service to the Pacific Rim scientific community over many years. The authors are working under the leadership of Dr. Shuntov over dozens of years.

At the time of the publication of this newsletter, Dr. Shuntov was still in the hospital. We sincerely wish him a speedy recovery.

(cont. from page 19)

A generic table was prepared of the ecosystem components and conditions for which information is desired:

- *Ecosystem components*: Top predators, commercial finfish, forage and nekton, benthos, zooplankton, and phytoplankton;

Desired information: Abundance and distribution; reproduction, recruitment, growth; ecosystem role; causes of mortality.

- *Ecosystem conditions*: nutrient chemistry; temperature, salinity, dissolved oxygen; ocean velocity field; atmospheric forcing;

Desired information: Magnitude and distribution, causes of variations.

The scope of an actual monitoring program will depend on which of these classes are already adequately monitored regionally, which are most salient for the recognized problems of the region or system, and which can be incorporated in a designed monitoring program at acceptable cost and using available technology. A vital monitoring base should be in place in all coastal states to which selected measurements can be added as appropriate. This base should include:

- coastal station measurement of sea level, surface temperature and salinity, winds, and atmospheric pressure;

- general knowledge of occurrence and life history of major marine species;
- measures of catch, effort, and size frequency distribution of major commercial species.

Panelists are to provide more detailed specification of monitoring needs in regions with which they are most familiar.

It was proposed to test the concept of monitoring, analysis, and prediction in several well-sampled regions where significant ecosystem changes such as regime shifts have been observed. In such regions one could ask to what extent ecosystem changes could have been predicted from the observed variables. Could predictability have been improved if additional or different variables had been monitored? Was inadequate predictability a consequence of inadequate monitoring, inadequate analysis, or inadequate understanding? Proposed locations for these retrospective experiments include Baltic Sea, CalCOFI area, Japan Sea/East Sea, Northwest Atlantic demersal stocks, Northeast Atlantic, Benguela, and Black Sea.

The Panel will meet again in Montpellier, France, March 22-23, 1999. Members from the PICES area include Michael Laurs (Hawaii), Daniel Lluch-Belda (Mexico), Takashige Sugimoto (Japan), Chang-Ik Zhang (Korea), Warren Wooster (USA).