

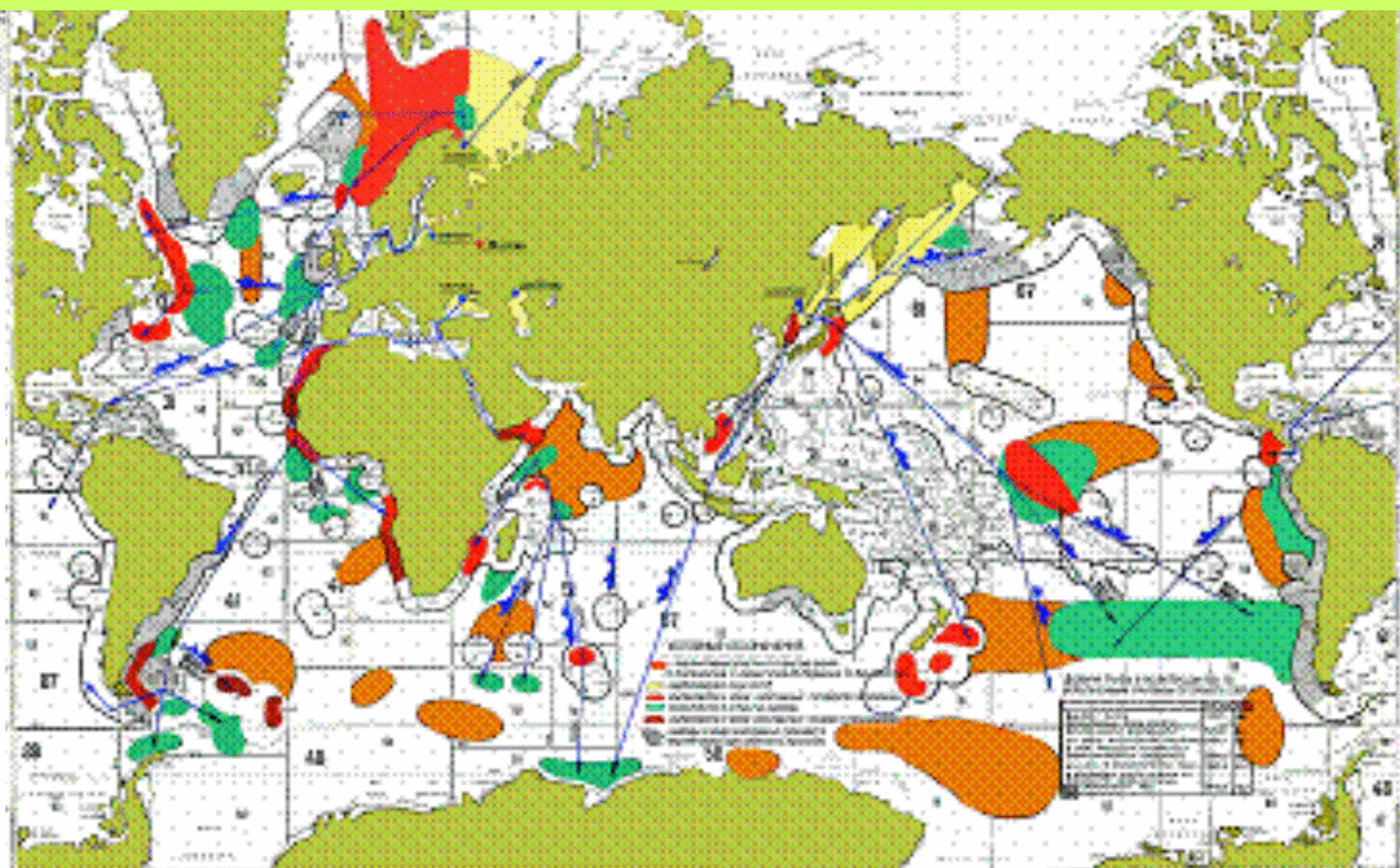


Ecosystem-based principles in the contemporary fisheries management on the Russian Far East

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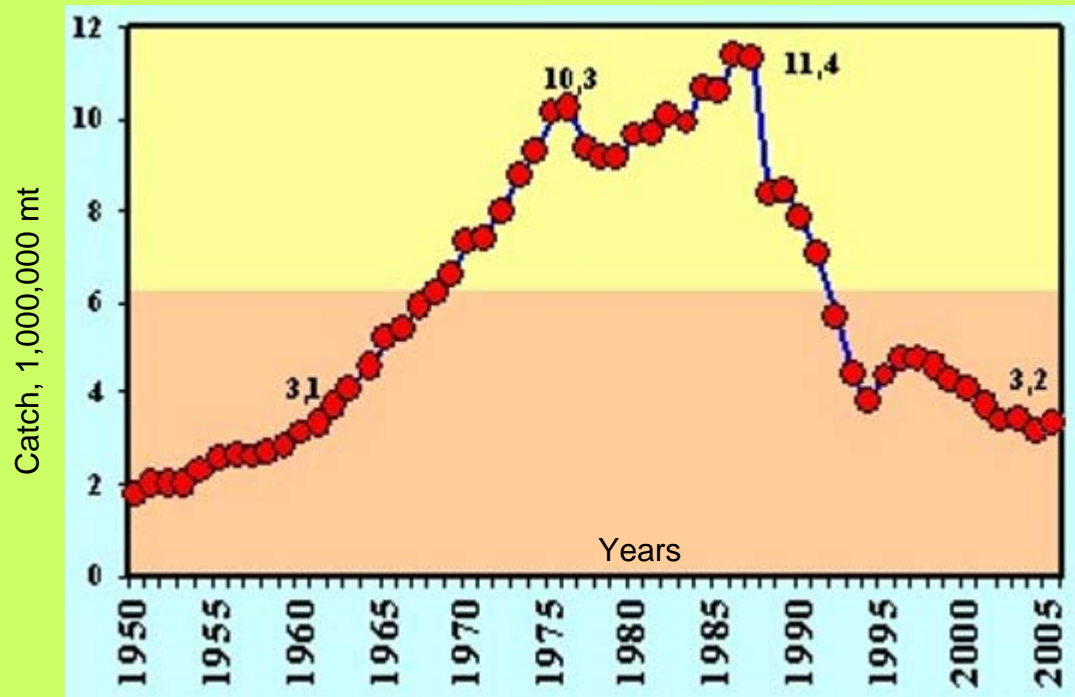
The actual removals are influenced by a range of other factors, which not always are taken into account (e.g. size of fishing fleet, control and enforcement of the regulations, industry investments, and markets for the commodities produced. Management is largely through effort control, and enforcement is in place. Additional data on ecosystem, and to some extent information on the impact of fisheries, is sometimes provided and occasionally fleet information is given as well. (Hoydal K. **Viewpoint: the interface between scientific advice and fisheries management // ICES J. Mar. Sci., 2007; 64(4): 846 – 850).**

Regions of Soviet expeditionary fishery in the foreign EEZs and open waters of the World Ocean at the end of 1980s



Red: - under agreements Green: - in the neutral waters Orange: - perspective areas

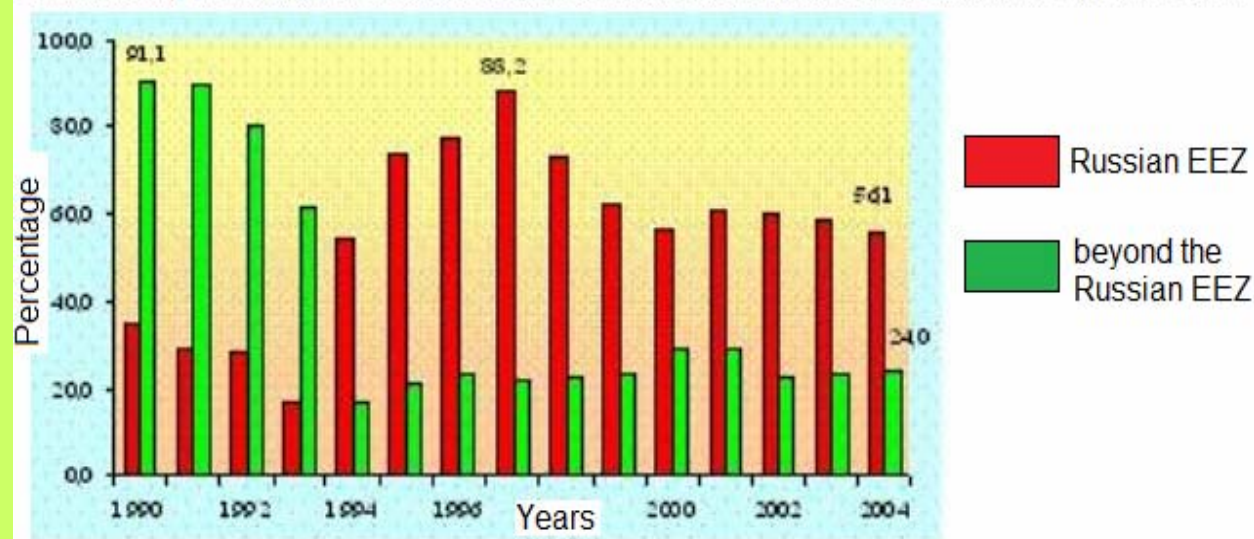
Russian (till 1991 - Soviet) fisheries catch (grand total), 1950-2005



Since late 1980s, the grand total fisheries harvest of national fisheries decreased in 3.5 times below to the level of 1960. The main case is growth the fuel prices, disaggregation of fisheries ventures, hard business conditions including the administrative barriers, high transportation tariffs, etc.

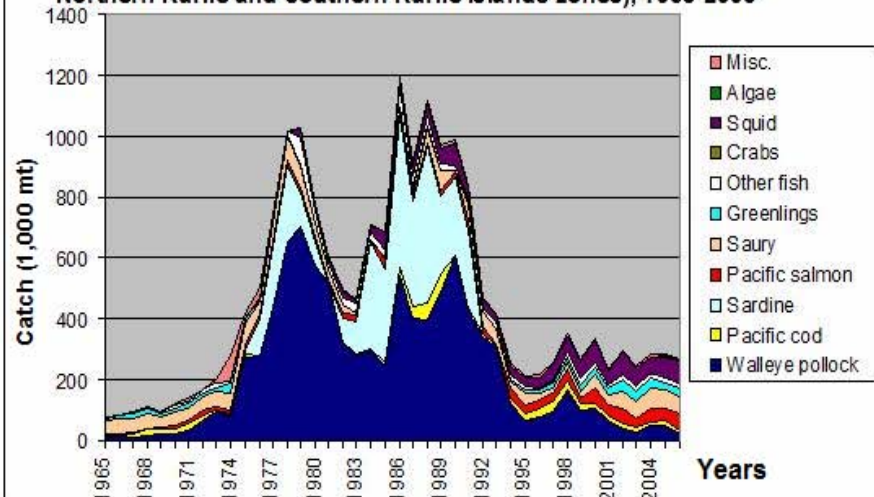
Russian fishery fleet has gathered in the own EEZ. Fishery press on available fishery resources has increased up to the limit of level in 1997.

Estimated percentage of available raw base utilization by the Russian fisheries, 1990-2004

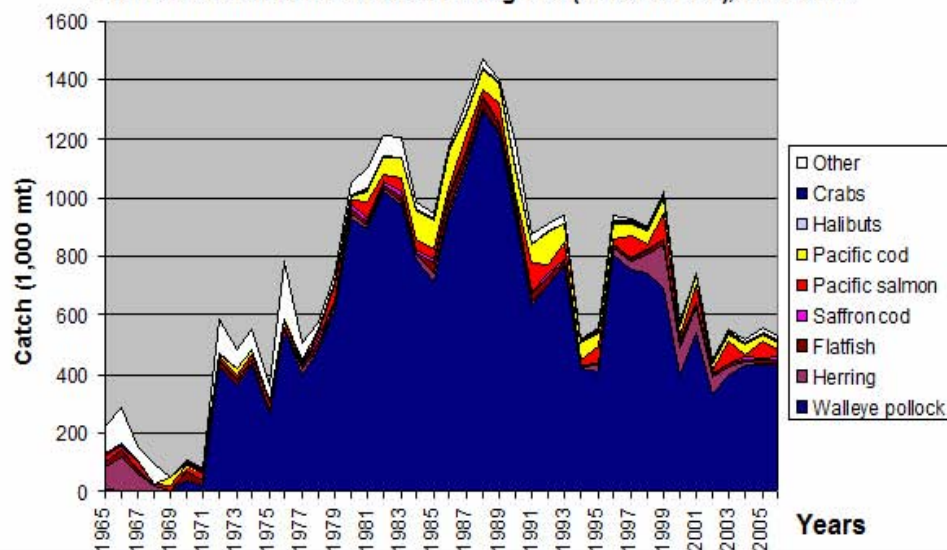


Structure of fishery harvest in the Russian Exclusive Economic Zone on the Far East, 1965 - 2006

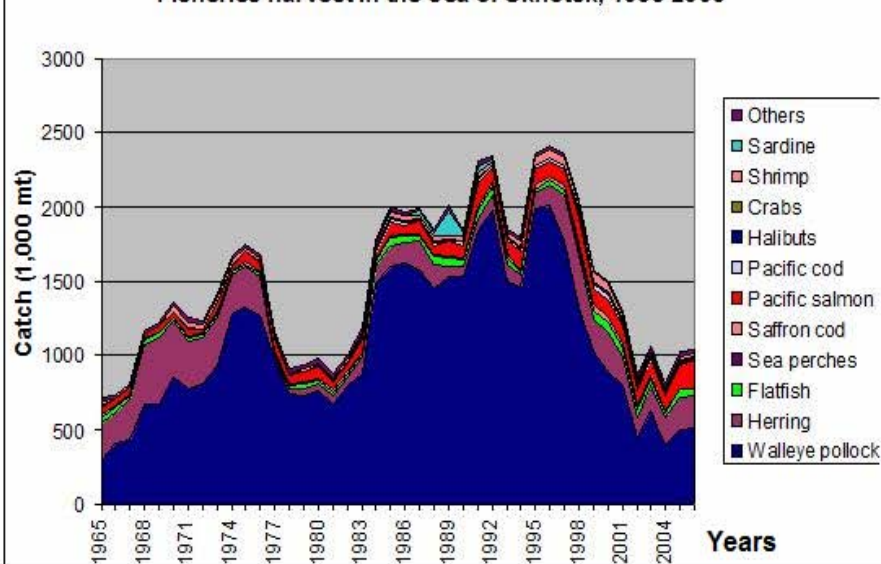
Fisheries harvest in the Russian EEZ in the Pacific Ocean (the Northern Kurile and Southern Kurile Islands zones), 1965-2006



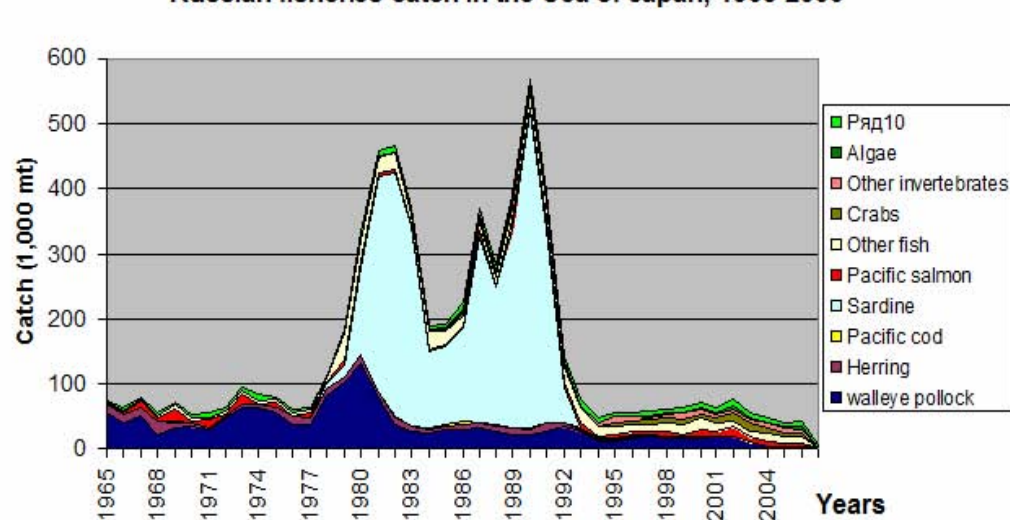
Fisheries catch in the western Bering Sea (Russian EEZ), 1965-2006



Fisheries harvest in the Sea of Okhotsk, 1965-2006



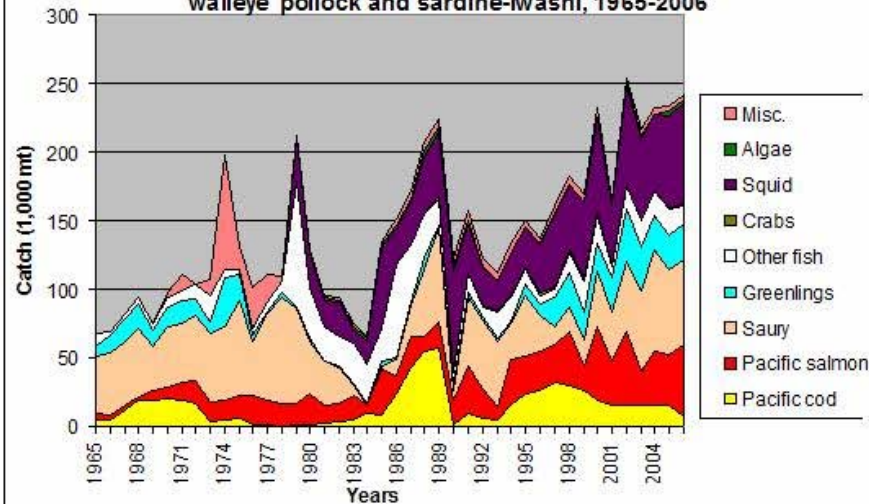
Russian fisheries catch in the Sea of Japan, 1965-2006



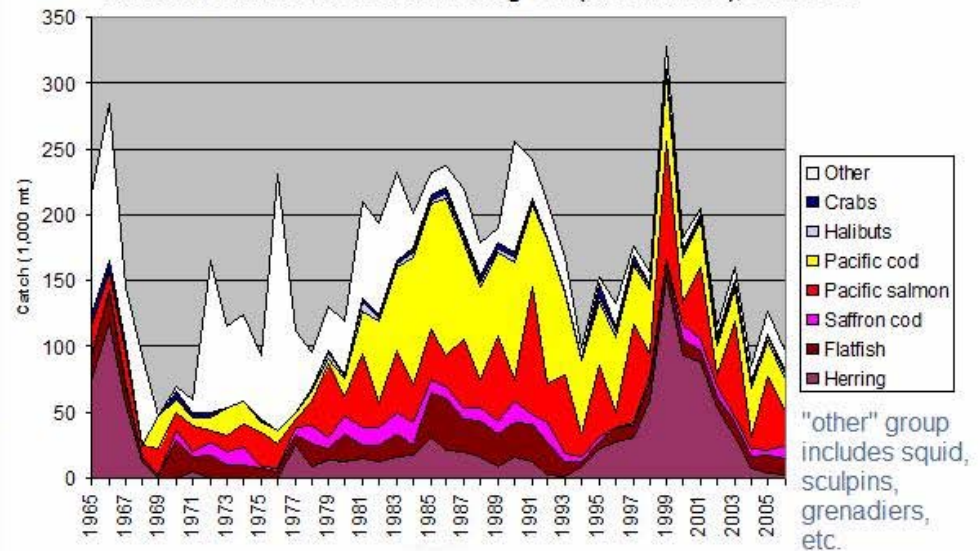
Russian Far East contributes more than 60% of total national fishery harvest

Structure of fishery harvest in the Russian Exclusive Economic Zone on the Far East, without walleye pollock and sardine-iwashi, 1965 - 2006

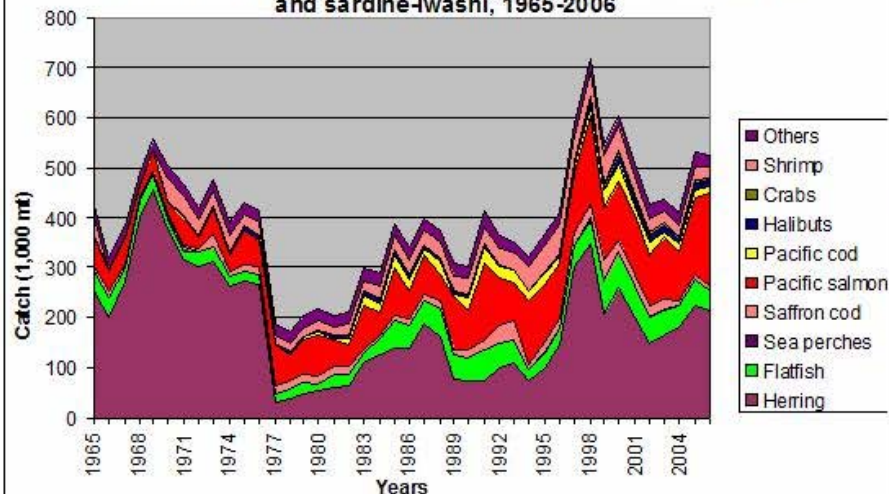
Fisheries harvest in the Russian EEZ in the Pacific Ocean (the Northern Kurile and Southern Kurile Islands zones) without walleye pollock and sardine-iwashi, 1965-2006



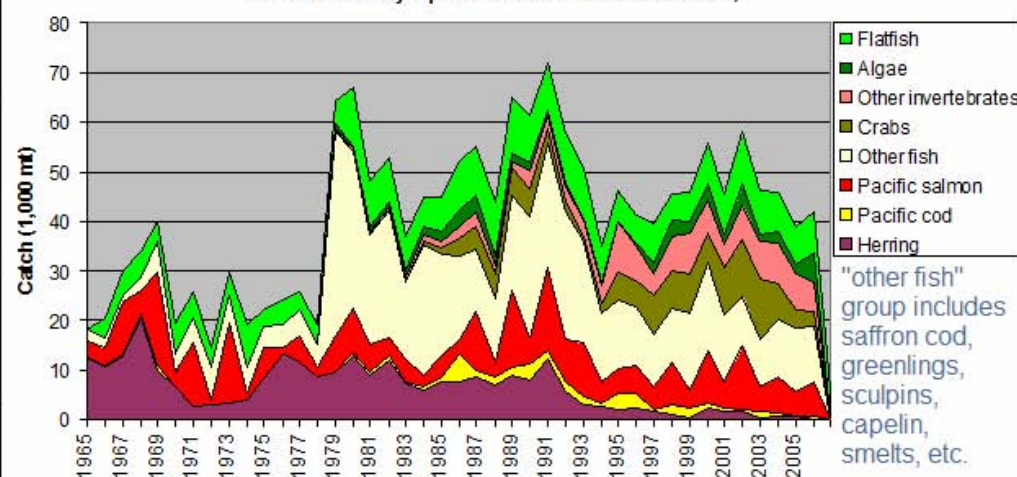
Fisheries catch in the western Bering Sea (Russian EEZ), 1965-2006



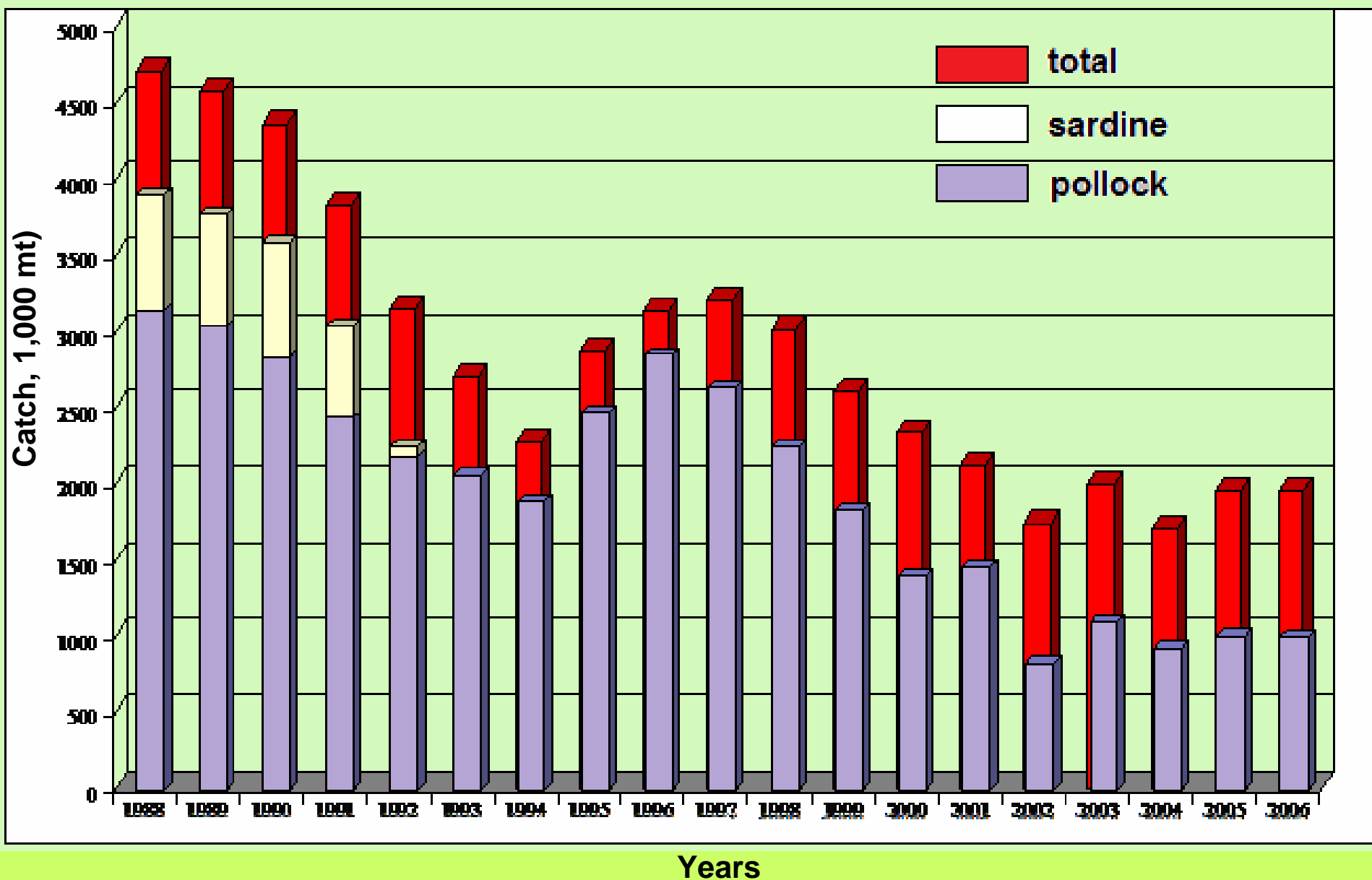
Fisheries harvest in the Sea of Okhotsk without walleye pollock and sardine-iwashi, 1965-2006



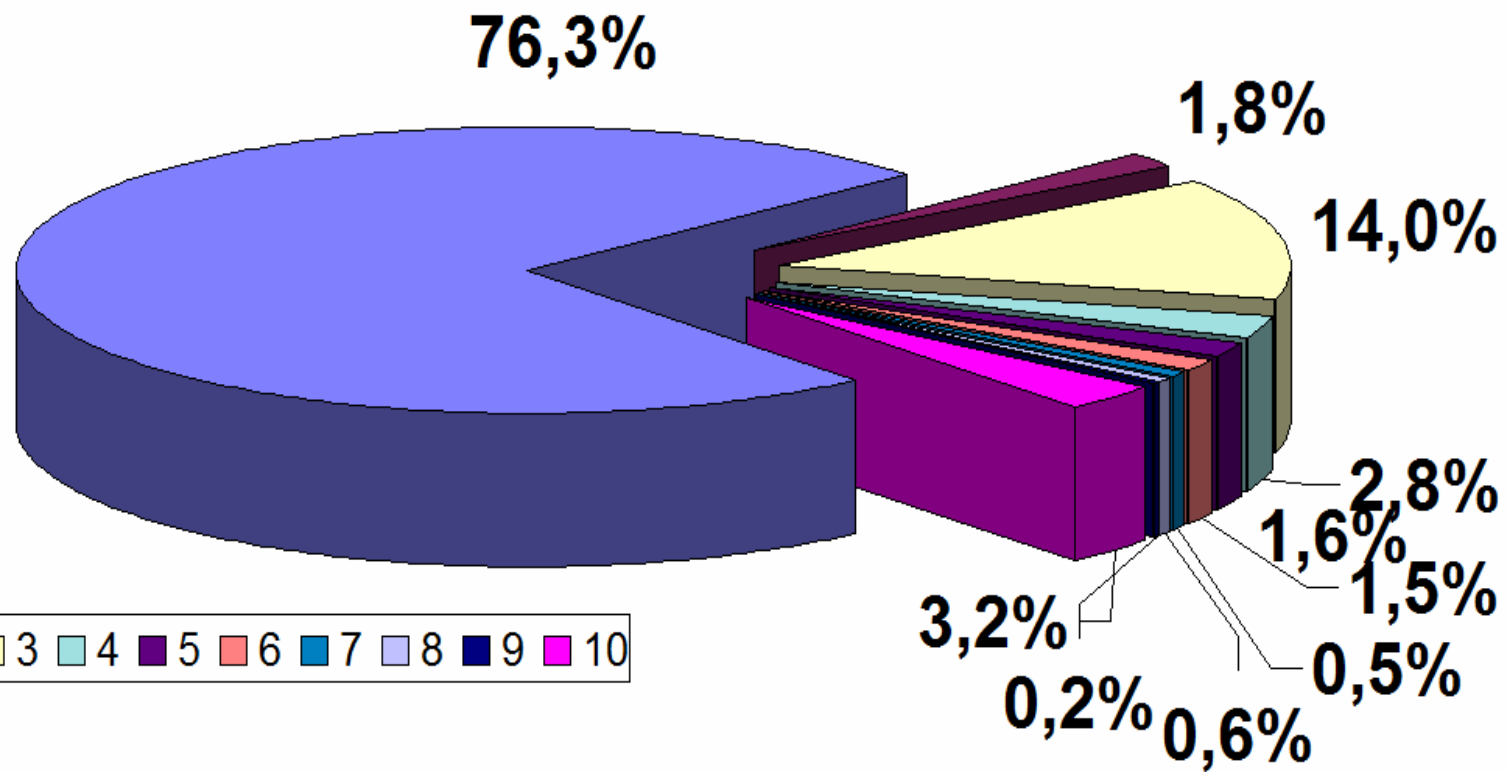
Russian fisheries catch in the Sea of Japan, 1965-2006 without walleye pollock and sardine-iwashi,



Fishery catch dynamics in the far-eastern part of the Russian EEZ (after Bocharov, 2004, with additions after Shuntov et al., 2007)



Fishery gears contribution to the total Russian fishery harvest (on example of 2005)



1 – bottom & pelagic trawls; 2 – purse seine; 3 – beach seines and stationary nets; 4 – Dutch seine; 5 – pots; 6 – long-line; 7 – divers; 8 – gillnets; 9 – dredge; 10 – saury liftnet

The legislative basis for the Russian fisheries management developed in 2003. Before, some temporary acts, instructions, forms have been in force.

“Conception of fisheries development in the Russian Federation until 2020” and “Procedure of biological resources usage” (Russian Government resolution No. 704 of 20.11.2004 “About quotas on the water biological resources”) have established a basis of long-term (five-years) quotas allocation between fishery ventures.

20 декабря 2004 года

№ 166-ФЗ

РОССИЙСКАЯ ФЕДЕРАЦИЯ
ФЕДЕРАЛЬНЫЙ ЗАКОН
О РЫБОЛОВСТВЕ И СОХРАНЕНИИ ВОДНЫХ БИОЛОГИЧЕСКИХ РЕСУРСОВ

Принят Государственной Думой
26 ноября 2004 года

Одобен Советом Федерации
8 декабря 2004 года

ГЛАВА 1. ОБЩИЕ ПОЛОЖЕНИЯ

Статья 1. Основные понятия

В настоящем Федеральном законе используются следующие основные понятия:

1) водные биологические ресурсы (далее - водные биоресурсы) - рыбы, водные беспозвоночные, водные млекопитающие, водоросли, другие водные животные и растения, находящиеся в состоянии естественной свободы;

The Federal law “On Fisheries and Water Biological Resources Conservation” was signed in 20 December of 2004.

Its realization required 30 more legislative documents including 15 governmental resolutions.

Статья 28. Общие допустимые уловы водных биоресурсов

1. Общие допустимые уловы водных биоресурсов определяются для рыбохозяйственных бассейнов и районов промысла во внутренних водах Российской Федерации, в том числе во внутренних морских водах Российской Федерации, а также в территориальном море Российской Федерации, на континентальном шельфе Российской Федерации и в исключительной экономической зоне Российской Федерации, в Азовском и Каспийском морях.

2. Ежегодно общие допустимые уловы водных биоресурсов определяются федеральным органом исполнительной власти в области

Ch. 28, i. 1:

Total allowable catches are determined for the fishery basins and the individual fishery area, including inner marine waters, territorial waters, continental shelf and exclusive economic zone of the Russian Federation, Sea of Azov and Caspian Sea.

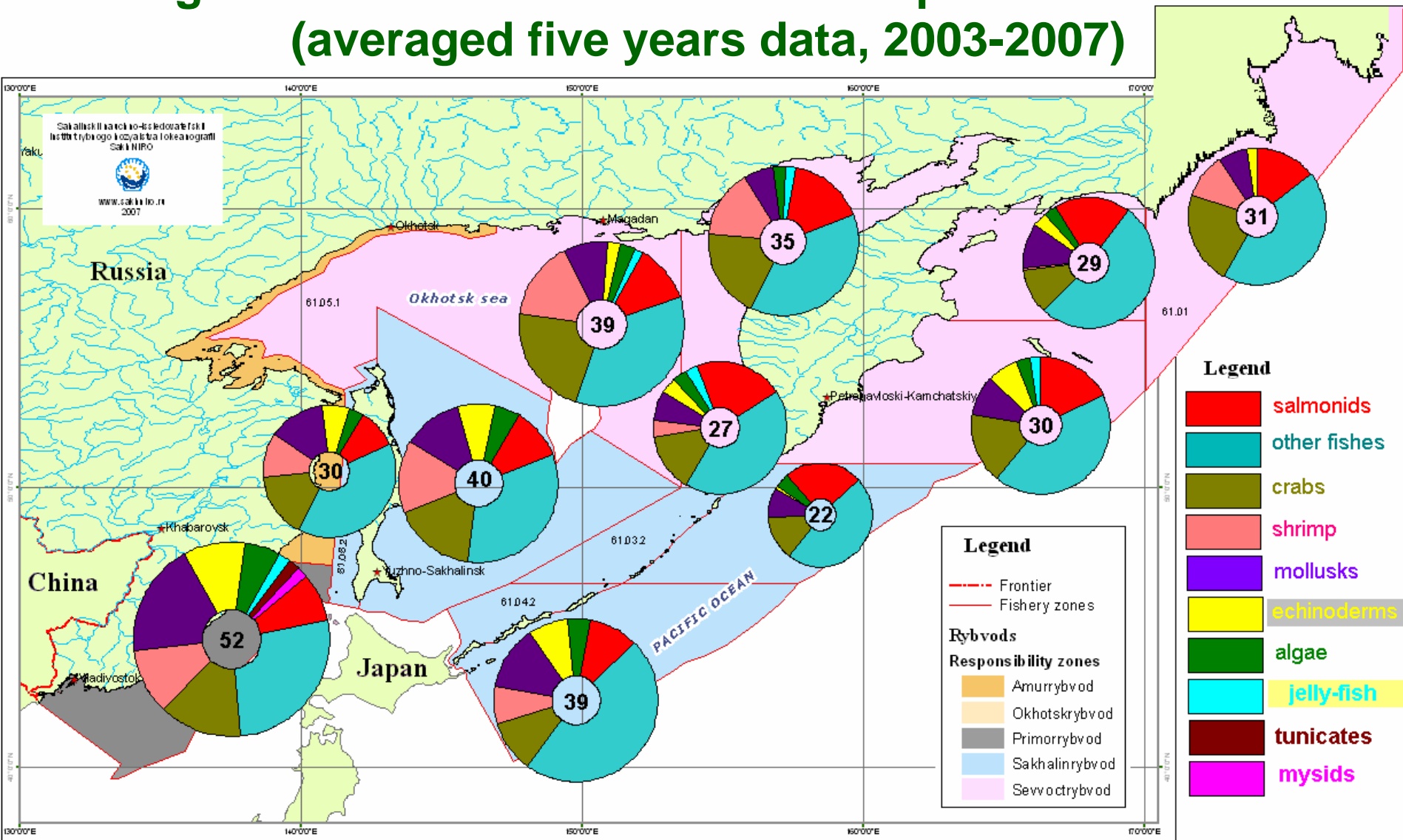
ранее утвержденные общие допустимые уловы водных биоресурсов.

4. Порядок и сроки определения и утверждения общих допустимых уловов водных биоресурсов, а также порядок внесения в них изменений устанавливается Правительством Российской Федерации.

Sub-conclusions derived from the up-to-date legislative basis status:

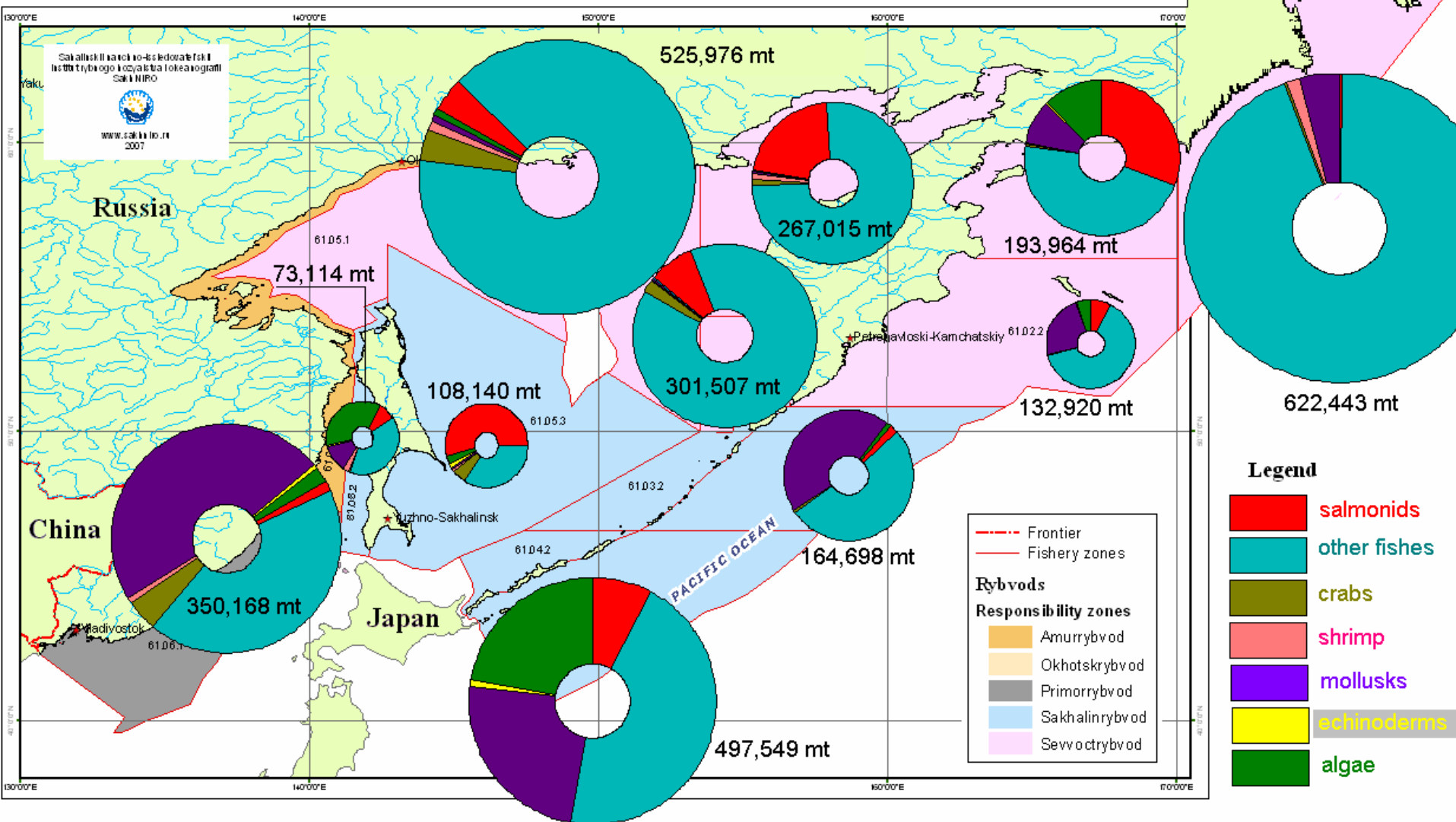
- 1. Legislative basis of the Russian fishery still is under the reformation. The basic principles of reforms are long-term quota allocations for fishery ventures, negotiation of superfluous administrative barriers, and strict poaching control.
- 2. Annual TAC setting procedure carried out some benefits for fisheries:
 - compelled to make comprehensive revision of all commercial species and stocks;
 - ensured and unified approach and centralized management of all bioresources, which are in the federal property;
 - made preconditions for objective rules of quota allocations established by the governmental resolution No. 740;
 - cut down a number of users of marine bioresources, which become excessive and led to deterioration of the most valuable fishery stocks;
 - allowed formation of new approaches to the tax collection for bioresources usage instead of previous procedure, when fishery rights being auctioned off. That ensured stability and regularity of federal and local budgets incomes.
- 3. Hyper-development of TAC setting approach also led to negative consequences (by-catch discard problems heightens, fishery statistics become worse), and become an obstacle of optimization of fishery management.

Number of fishery stocks distribution between the fishery management zones on the far-eastern part of Russian EEZ (averaged five years data, 2003-2007)



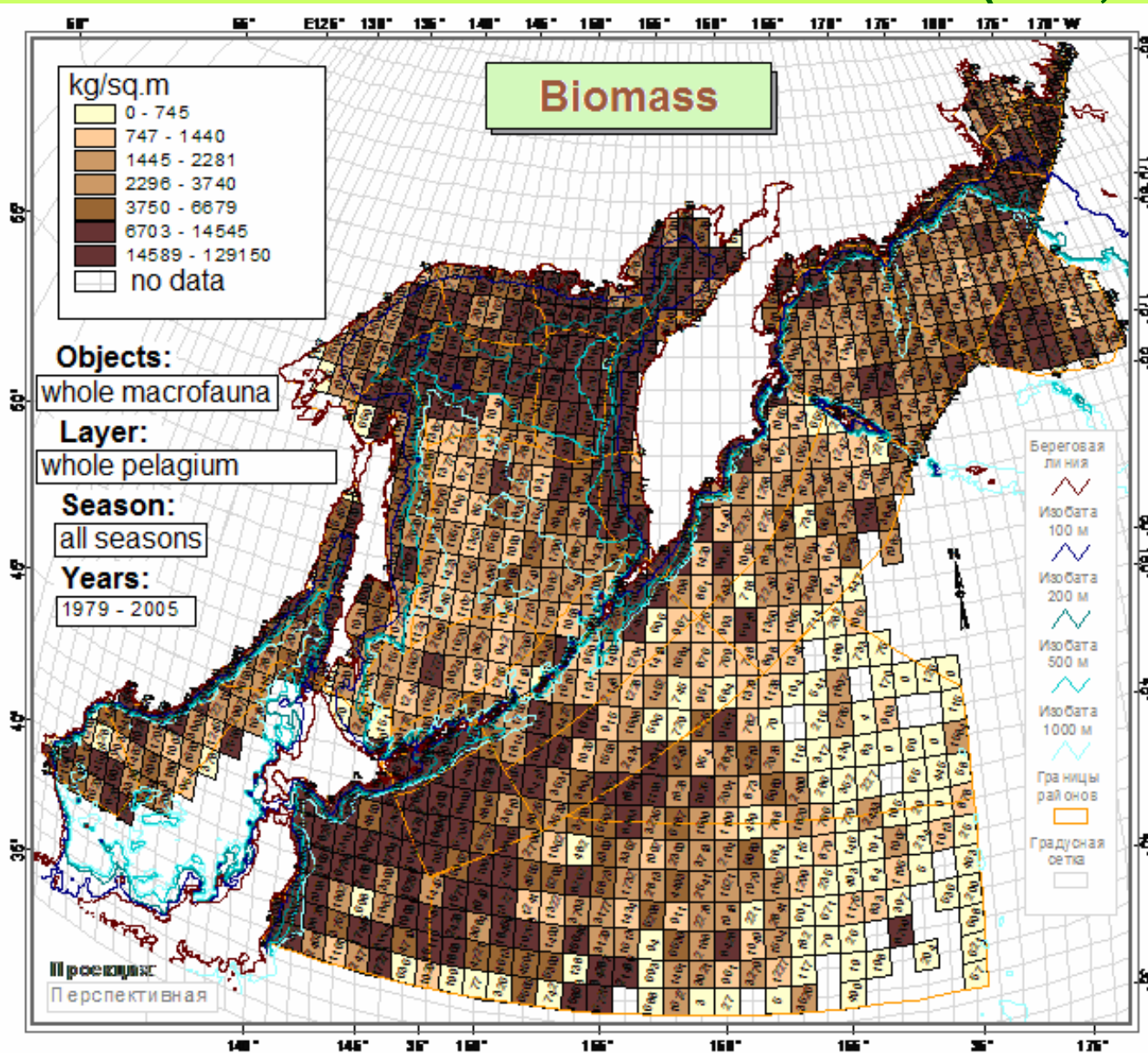
Number of fishery stocks for each fishery management zone is indicated inside the diagrams. Annual TAC setting is executed for the each of 374 fishery stocks.

TAC distribution between the fishery management zones on the far-eastern part of Russian EEZ (averaged five years data, 2003-2007)



* Portions of mysids, jelly-fishes and tunicates are too small for to be indicated on diagrams

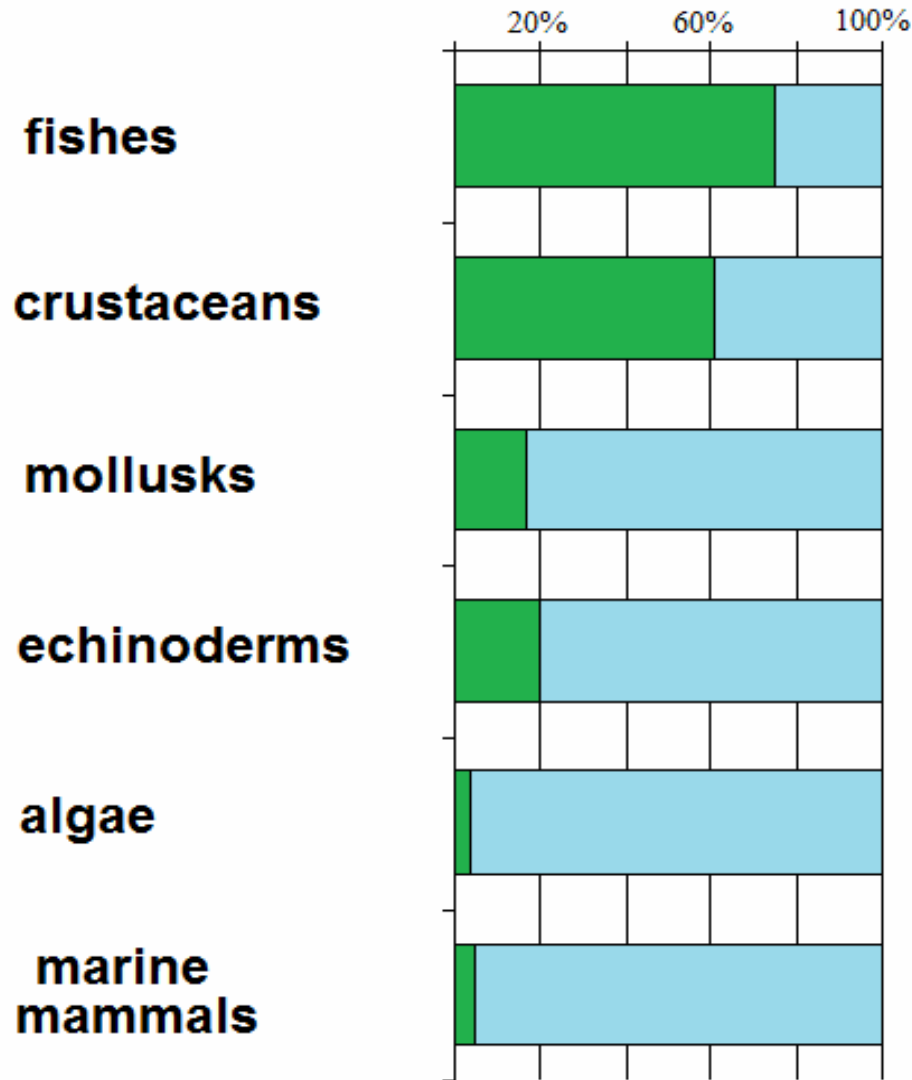
Russian fishery science has completed inventory of the water bioresources in the pelagic layer of far-eastern seas with publication of series of “Atlas...” and “Nekton...” (2003,2004,2005,2006)



The data base for these eight volumes includes results of 22,200 trawl hauls in research cruises. There is a basis for future monitoring and fishery management advises.

Illustration is taken from the Shuntov et al., 2007

Estimated proportion of fishery resources utilization in the far-eastern part of the Russian EEZ (after Bocharov, 2004)



According to prospective forecast of TINRO-Center, fisheries harvest in the far-eastern seas could reach 3.8 million mt at 2015. It is about 1,000 mt higher than the present level.

Realization of this forecast depends on several factors:

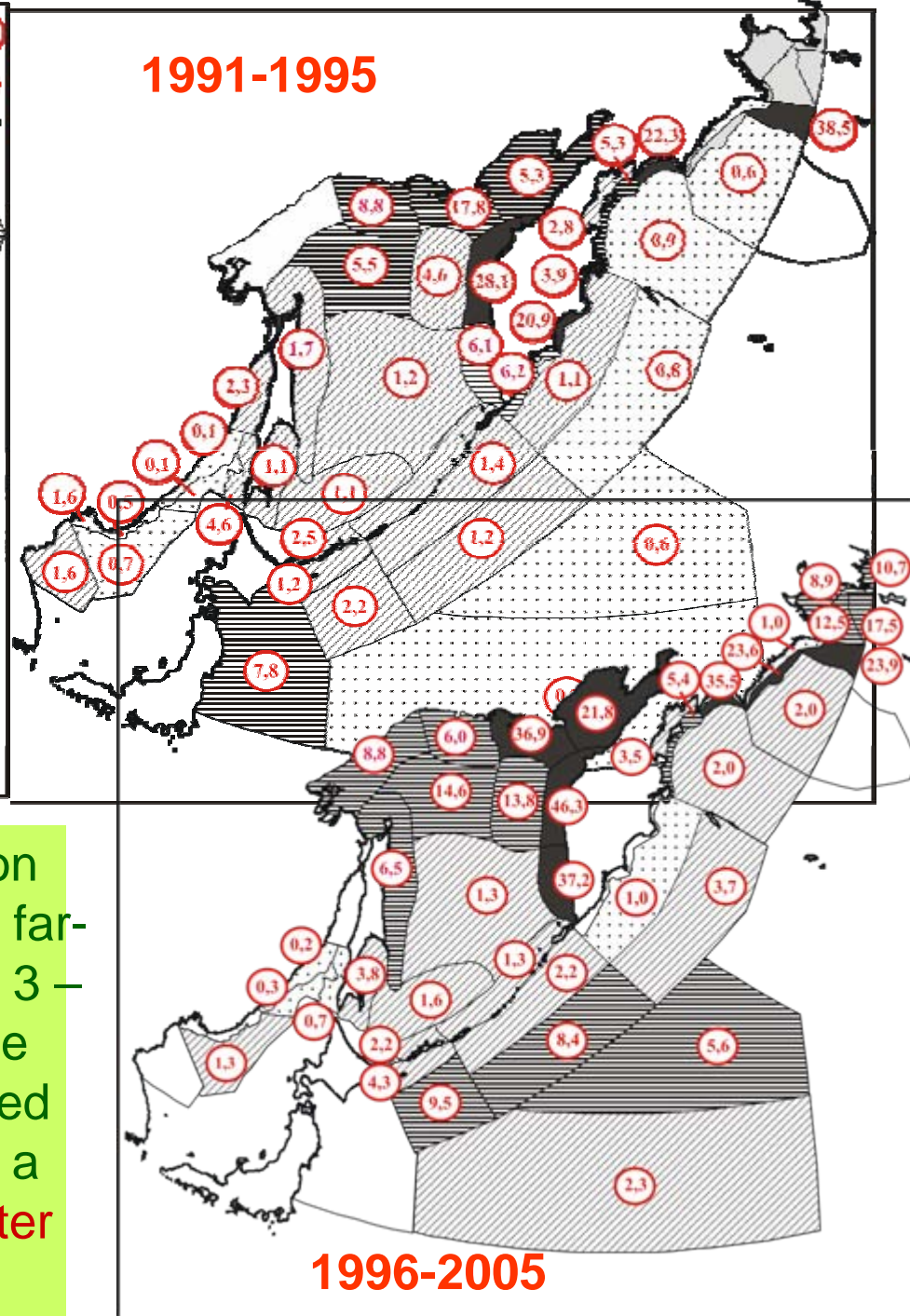
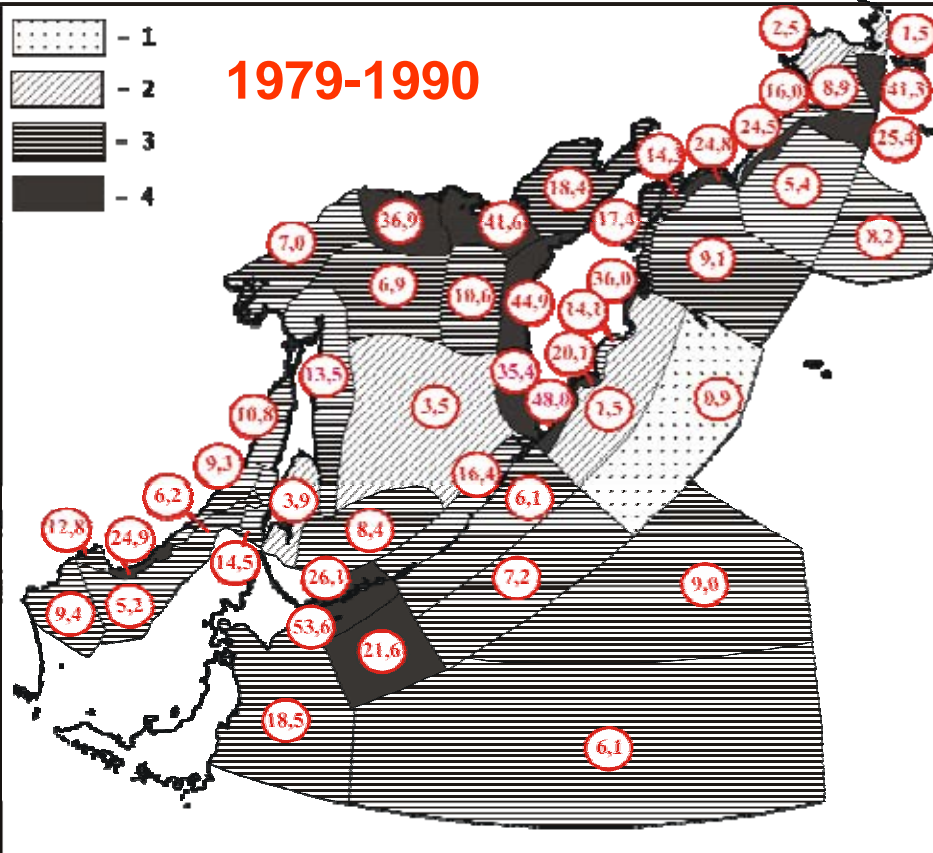
general socio-economical conditions in the far-eastern region;

-fishery management improvement and optimization;

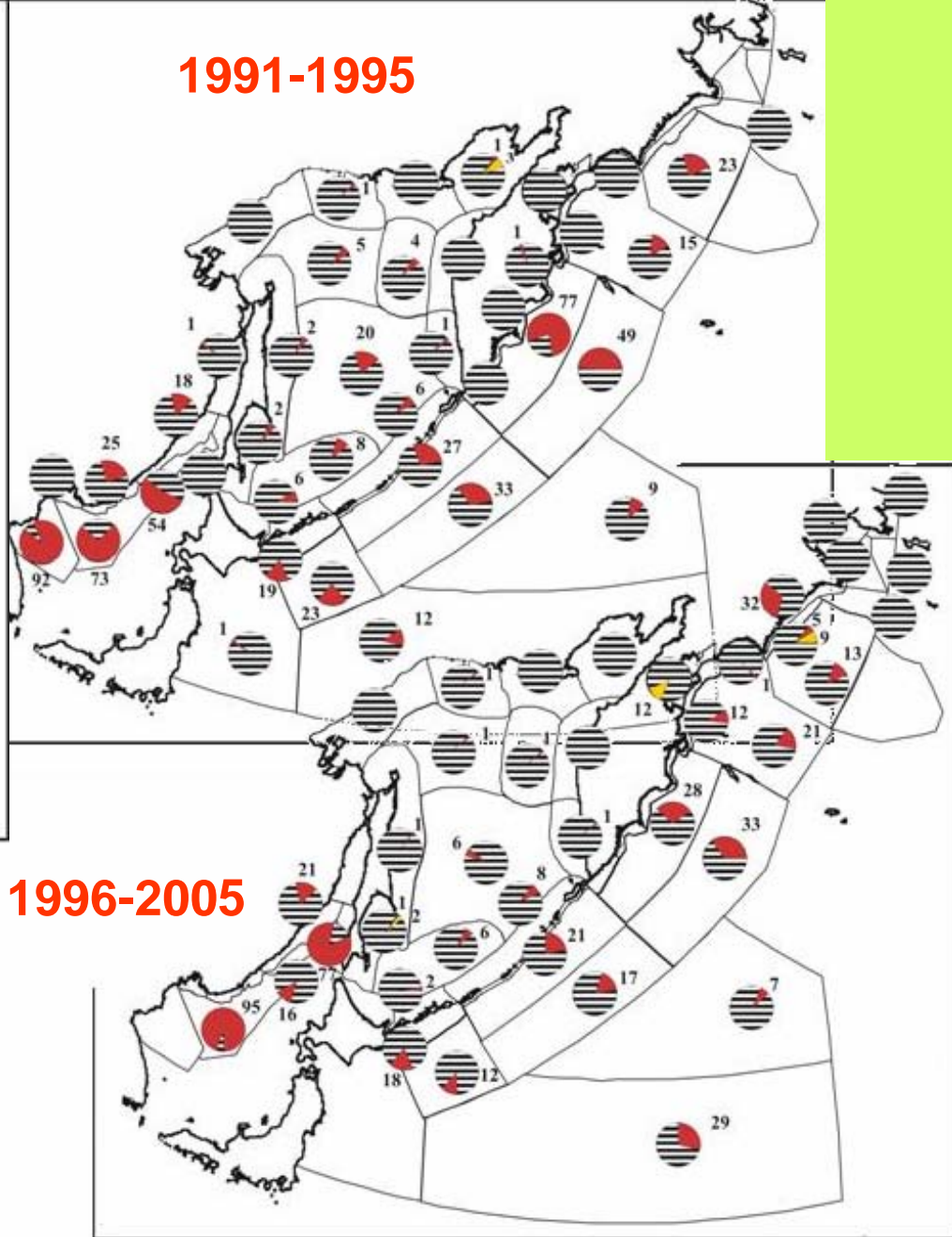
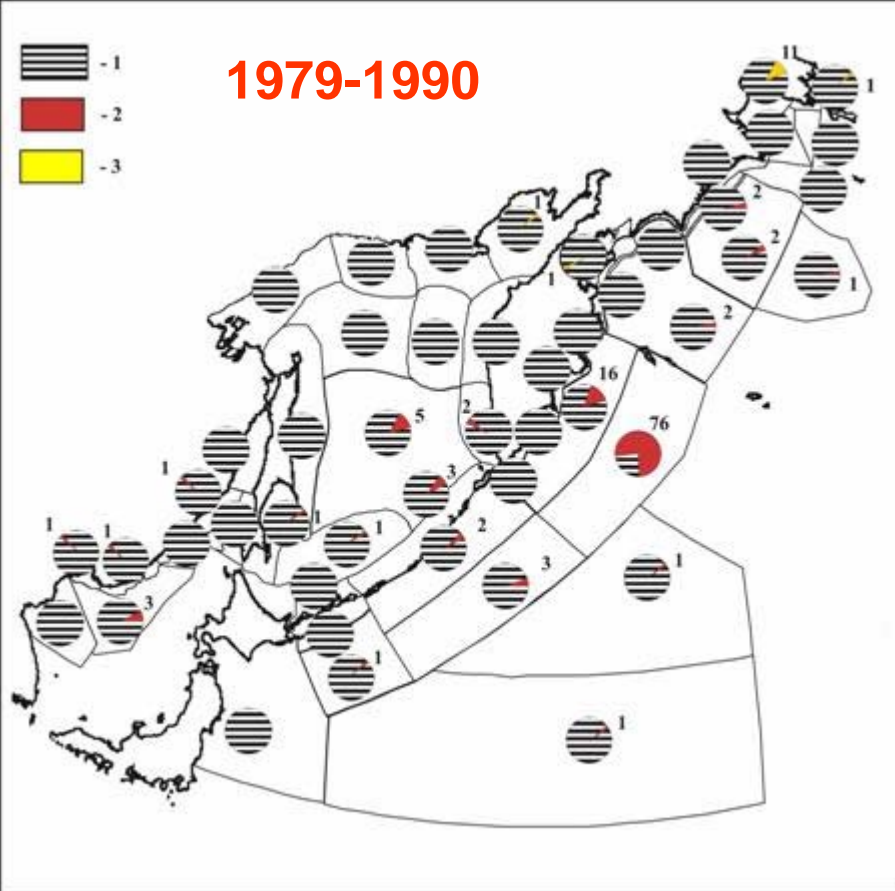
-scientific and technical progress;

- preconditions for un-fished and under-fished resources utilization (mesopelagic fish, pelagic squids, marine mammals, small bivalves, kelp, jelly-fish, etc.);

- abundance dynamics of common pelagic fish (walleye pollock, sardine, herring, Pacific salmon, etc.).

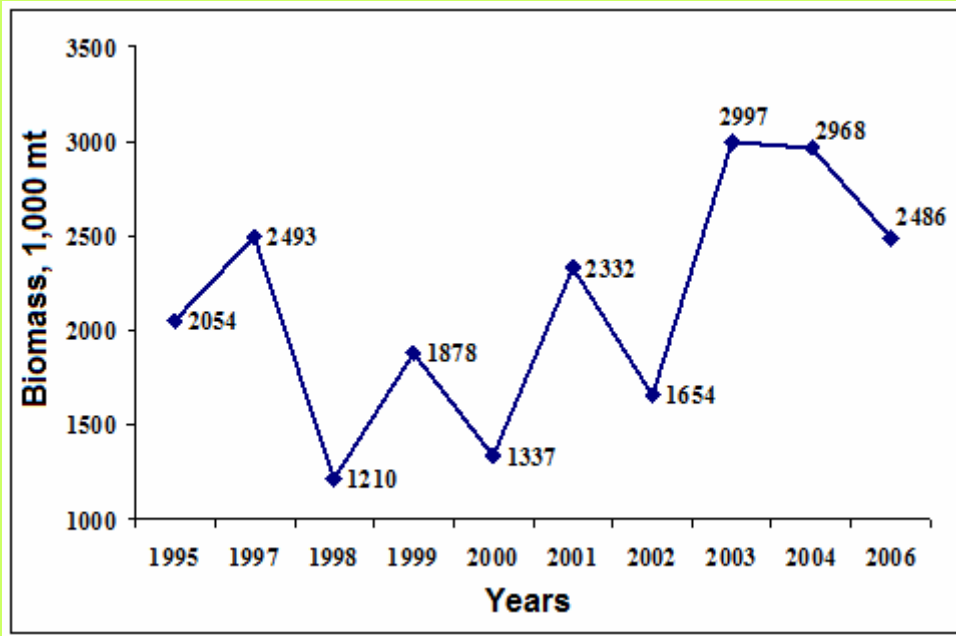


Long-term dynamics of pelagic nekton distribution in biostatistical areas in the far-eastern seas: 1 – below 1; 2 – 1,1-5,0; 3 – 5,1-20,0; 4 - > 20 mt/sq. km. Average value is indicated in circles. Forecasted decrease and further stabilization on a lower level are confirmed by facts. **After Shuntov et al., 2007**



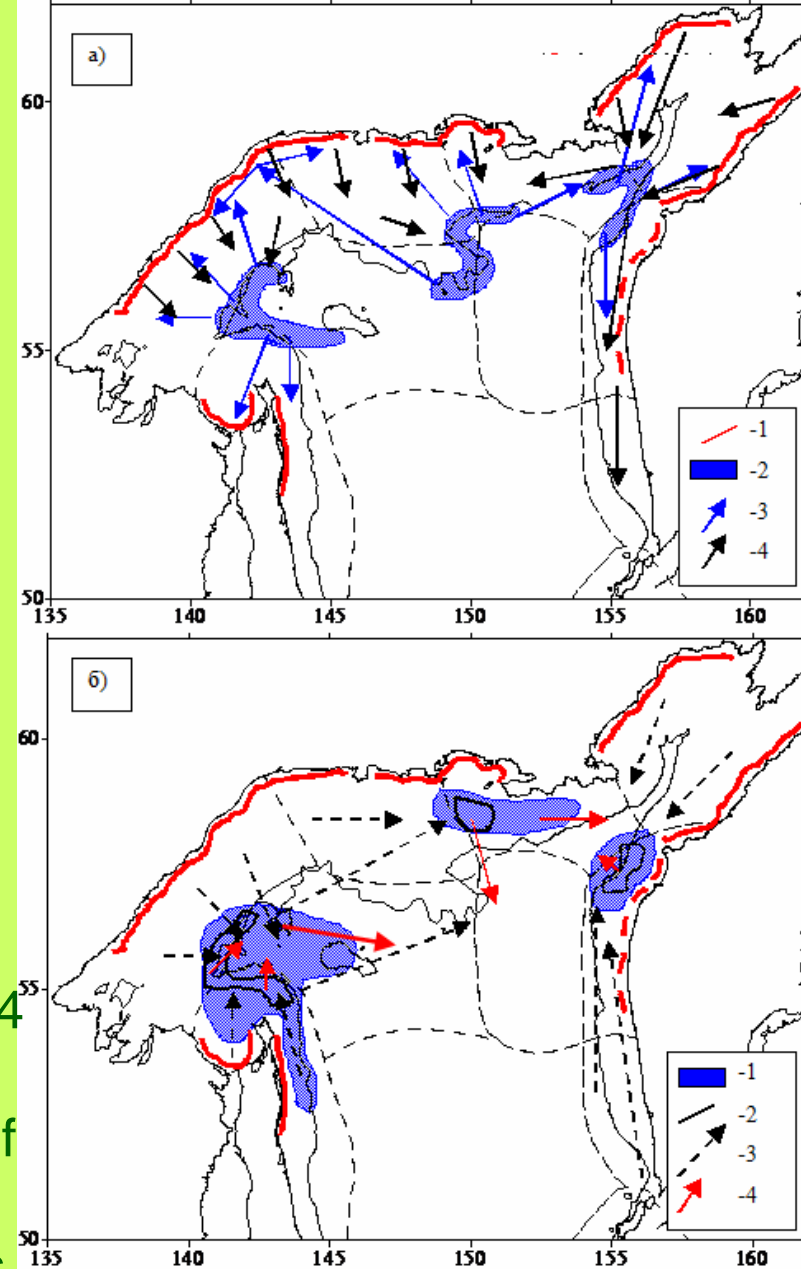
Long-term dynamics of pelagic nekton composition in biostatistical areas in the far-eastern seas: 1 – fish; 2 – squid; 3 – shrimp. Numbers show summary percentage of shrimp and squid.
 After Shuntov et al., 2007

Pacific herring biomass in the northern Sea of Okhotsk, after S. Loboda, unpubl. report, cited after Shuntov et al., 2007

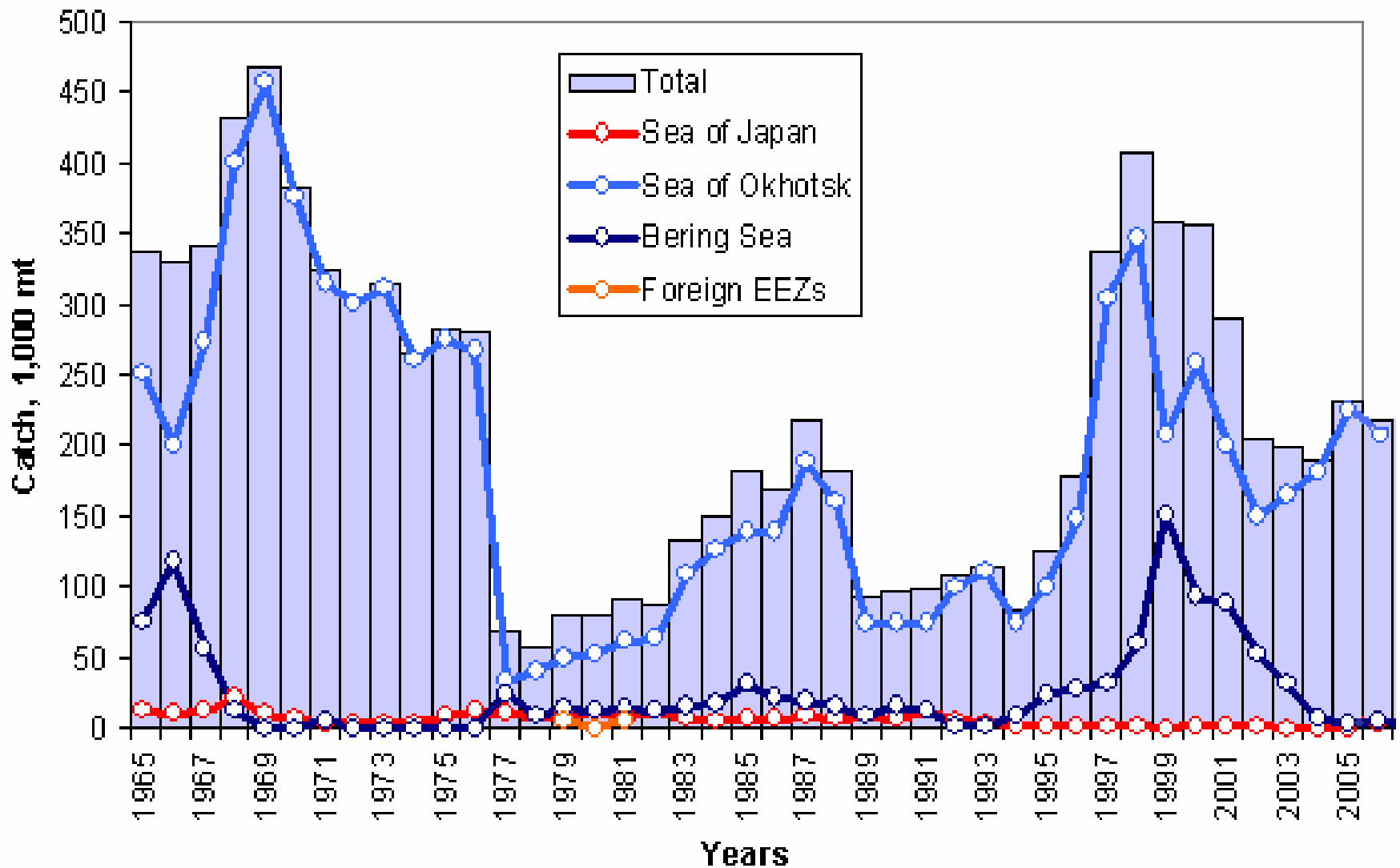


Herring seasonal migrations in the northern Sea of Okhotsk: a) 1 – spawning area; 2 – wintering area; 3 – pre-spawning migrations; 4 – feeding migrations; б) 1 – regions of autumnal aggregations formation; 2 – limits of pre-wintering aggregations distribution; 3 – autumnal migrations; 4 – wintering migrations.

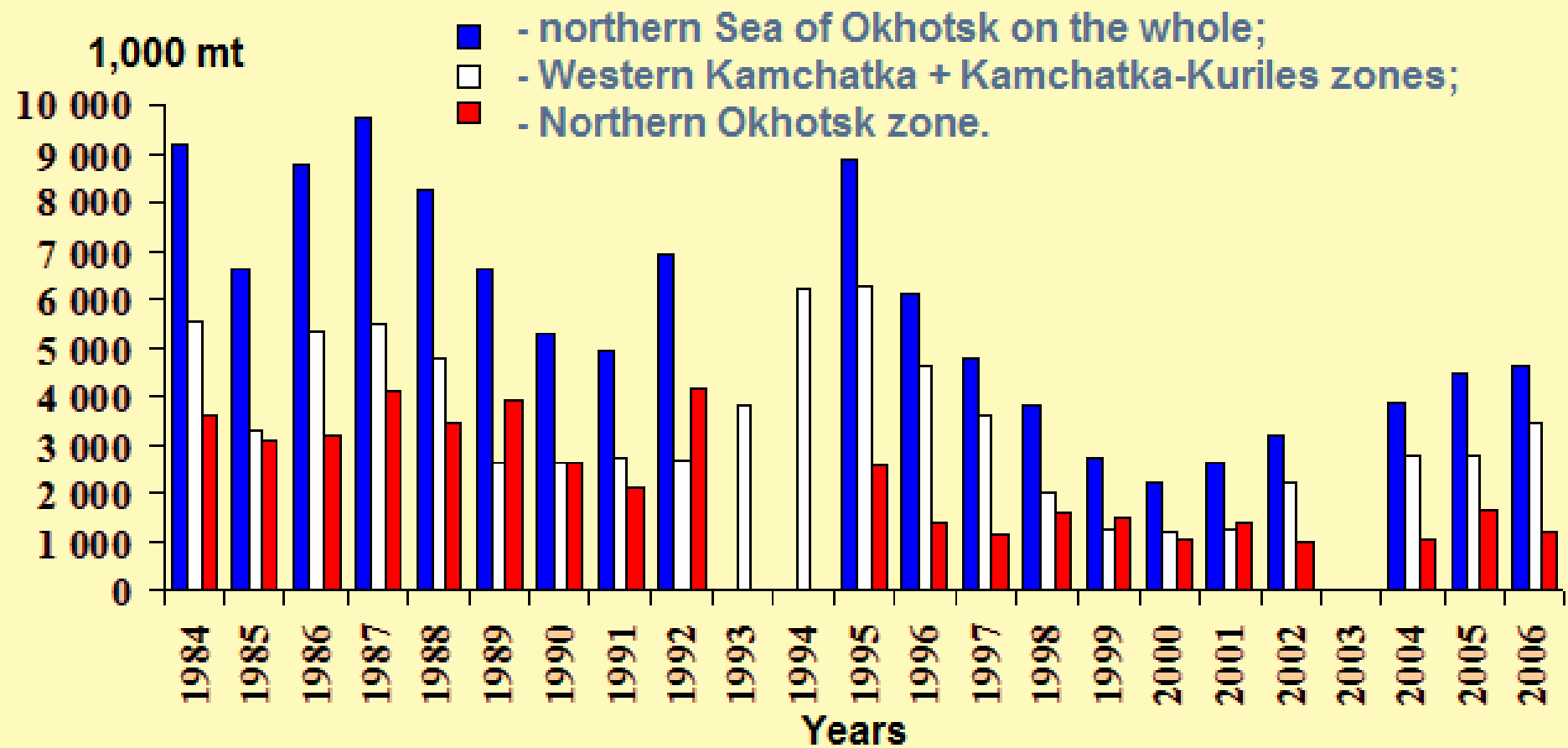
Biostatistical area borders are showed by dotted line. Isobathic line 200 m – by firm line (after I. Melnikov & S. Loboda, 2004)



Pacific herring catch by Russian fishery, 1965 - 2006

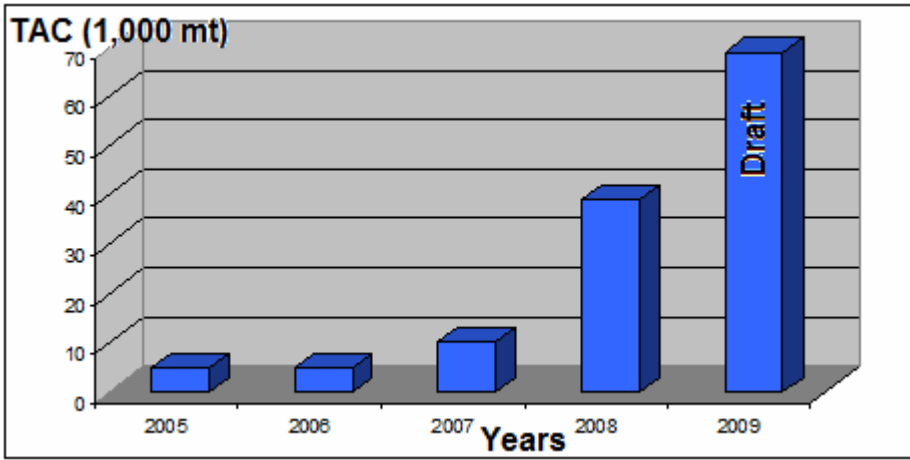
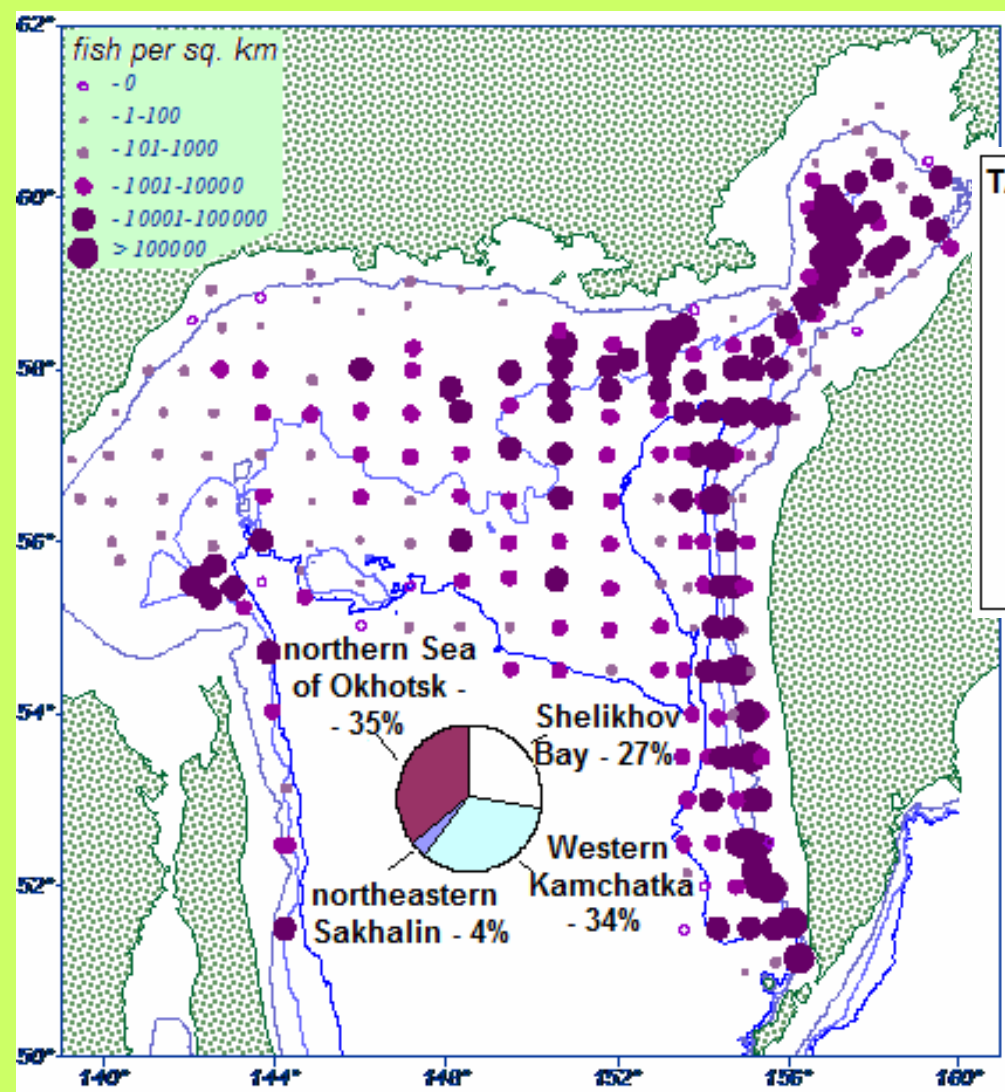


***Sea of Okhotsk contributed 98.6% in 2006**

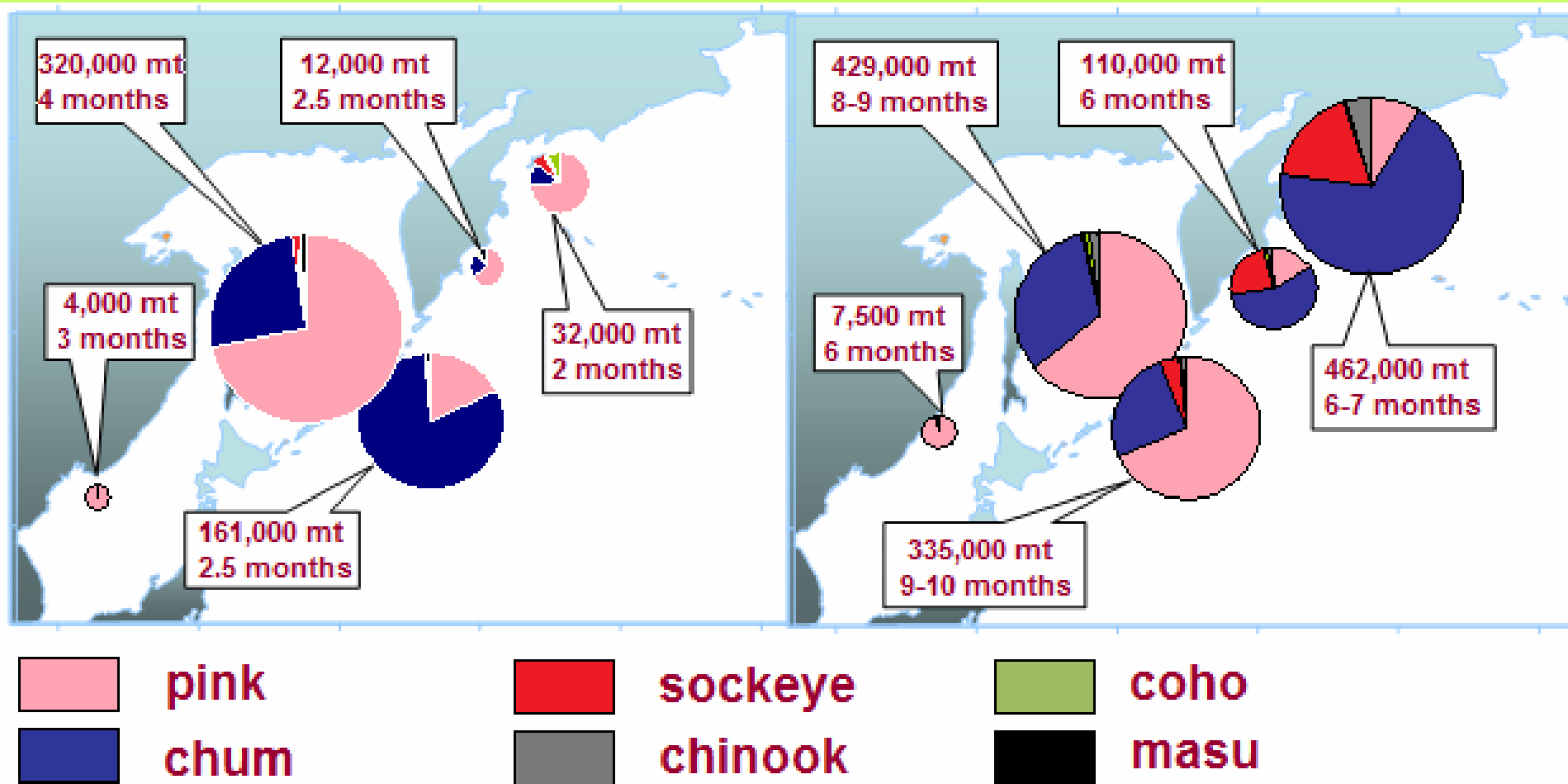


Walleye pollock spawning stock dynamics in the northern Sea of Okhotsk, 1984-2006, after Smirnov & Avdeev, 2003 with their additions

Distribution of spawning walleye pollock (fish/ sq. km) and percentage of spawning biomass between the main spawning areas (diagram) in the Sea of Okhotsk in spring of 2005 (data of G. Avdeev & E. Ovsyannikov, cited after Shuntov et al., 2007)



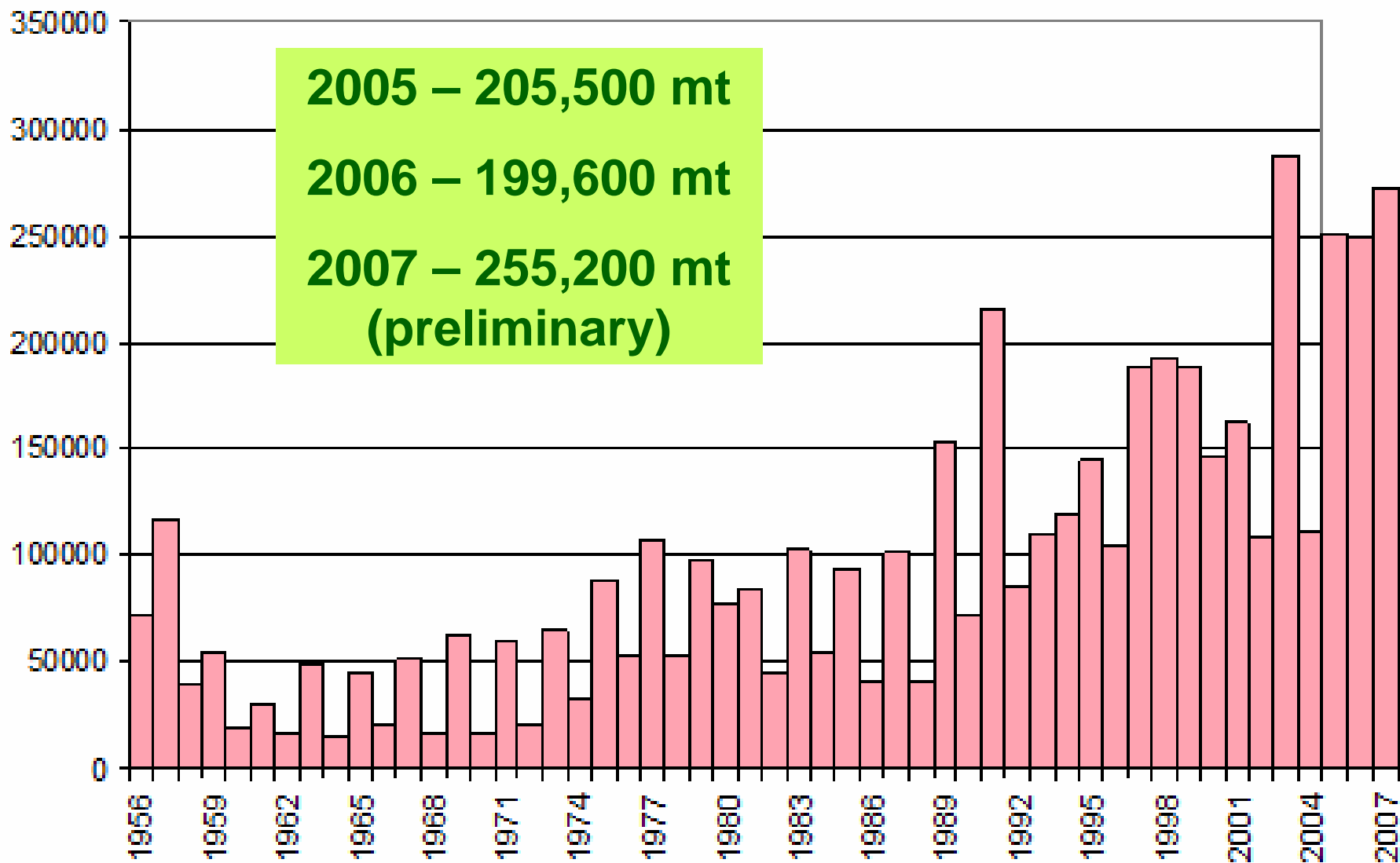
Walleye pollock TAC dynamics in the Eastern Sakhalin fisheries zone in the last years, 2005-2009 (draft)



Species composition, biomass, and duration of Pacific salmon feeding migration route in the Russian EEZ limits. Juveniles entered sea in this year – left side, all size groups – right side, after Shuntov et al., 2007.

Total pink salmon catch (mt) on the Russian Far East, 1956 - 2007

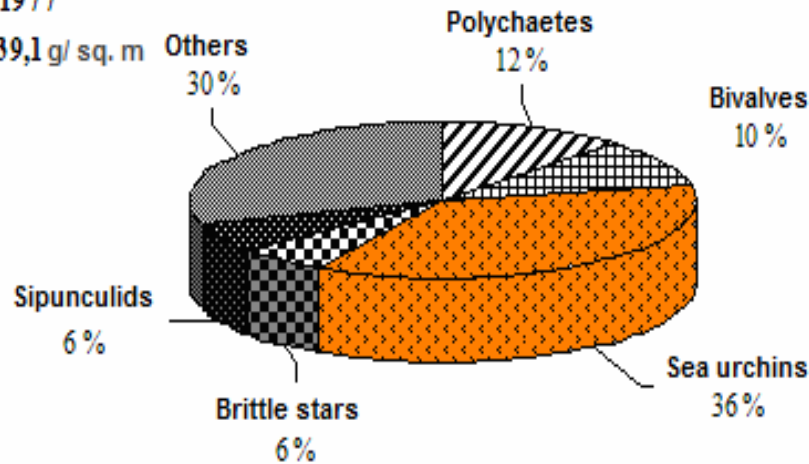
2005 – 205,500 mt
2006 – 199,600 mt
2007 – 255,200 mt
(preliminary)



Benthos biomass comparisons for the 1970s – 1980s and 2000s: left side – north-eastern Sakhalin shelf; right side – the western Kamchatka shelf, after Nadtochiy et al., 2004, Nadtochiy & Budnikova, 2005

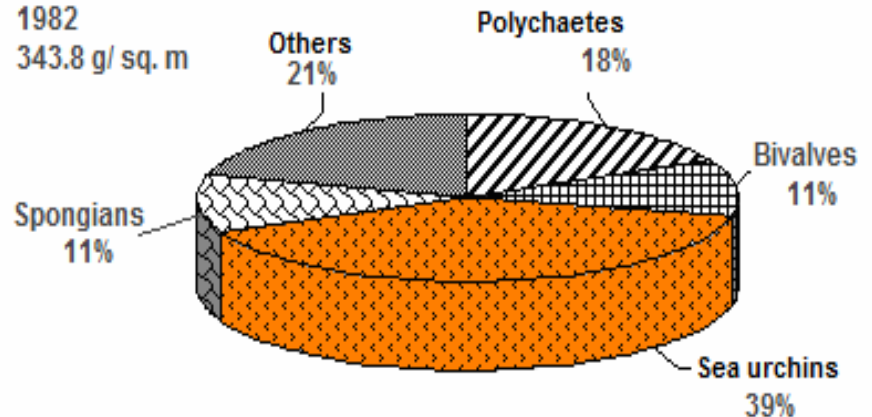
1977

339,1 g/ sq. m



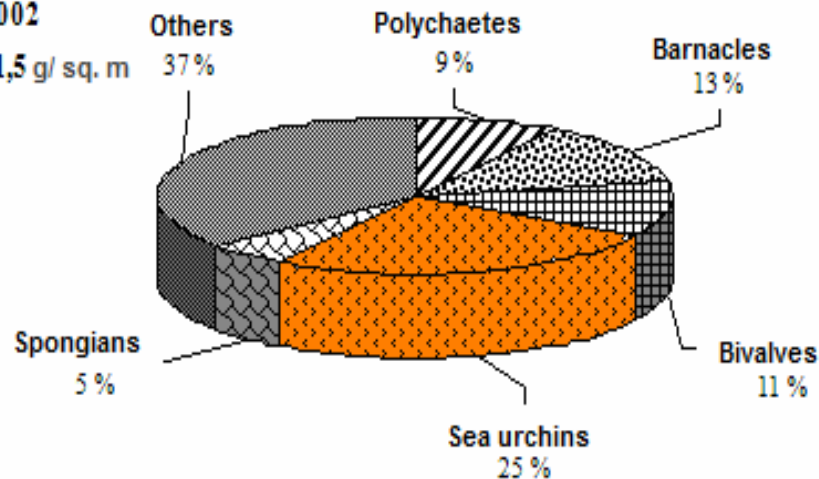
1982

343.8 g/ sq. m



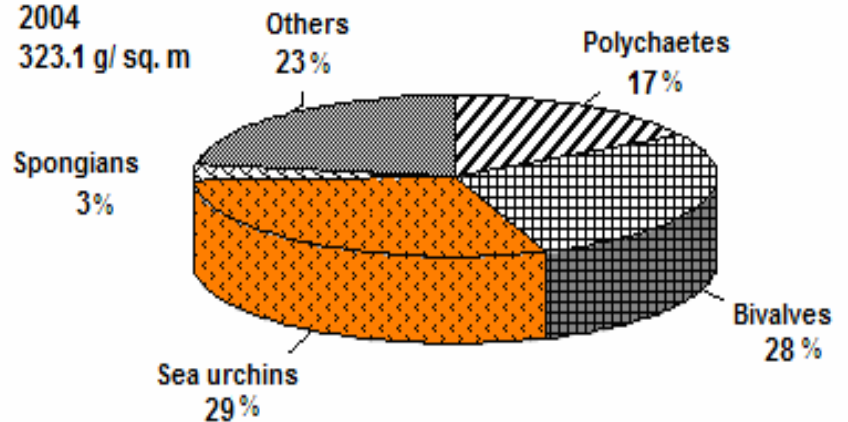
2002

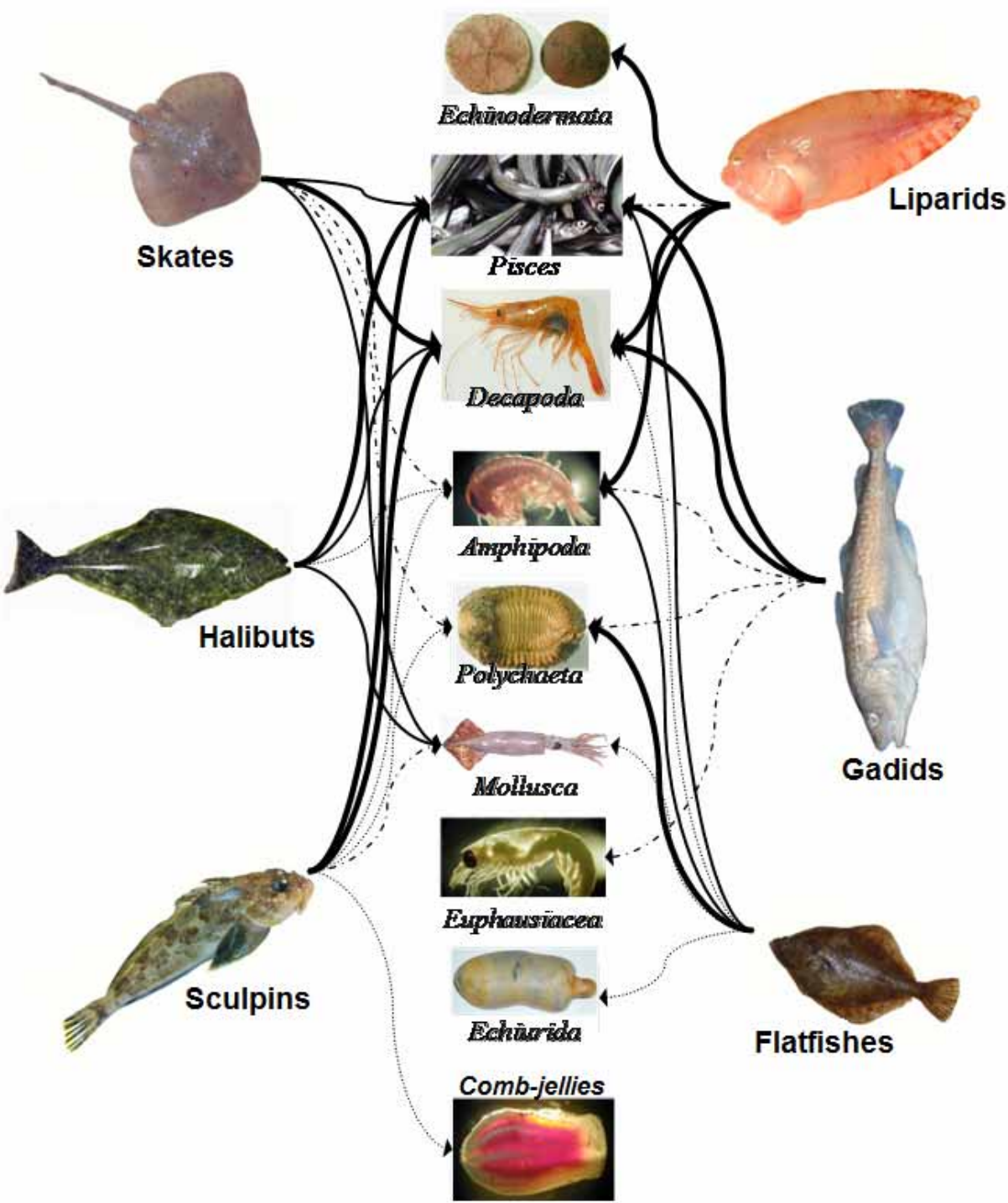
421,5 g/ sq. m



2004

323.1 g/ sq. m





Trophic linkages of common groundfish species in the western Bering Sea. Portion in the diet ratio, %:

- < 3 %,
- - - - -→ 3-10 %,
- 10-20 %,
- > 20 %

(after V. Napazakov, 2003)

Sub-conclusions derived from results of the ecosystem studies in the far-eastern seas

- 1. The most stocks of biological resources in the far-eastern seas and adjacent Pacific waters stays in the satisfactory and good conditions. Raw base of the Russian fishery consist of numerous species and types of resources, some of them are under-utilized for a long time.
- 2. The main factors effecting biological and fishery productivity of the far-eastern seas are natural ones, as biotic as physical. Data of ecosystem state monitoring show cyclic nature of many natural processes with different (often hidden) periodicity. Amplitude of interannual and long-term variability can be rather significant. Regular monitoring is necessary not only on the commercial fishery stocks but also on common species, communities and ecosystems on the whole.
- 3. Consideration of global and large-scale physical factors can be insufficient for analysis of processes in marine populations and communities in the individual seas and smaller areas. Local (provincial) conditions can effect them in more degree than global ones. Therefore, results of studies in any area could not be extrapolated on other, even neighboring region. This is important issue for the ecosystem studies planning, monitoring, and fishery stock management.



МИНИСТЕРСТВО СЕЛЬСКОГО ХОЗЯЙСТВА
РОССИЙСКОЙ ФЕДЕРАЦИИ
(Минсельхоз России)

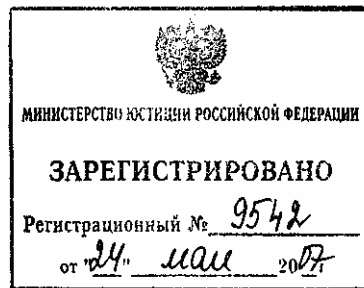
П Р И К А З

от 10 мая 2007 г.

№ 260

Москва

О внесении изменений в Правила
рыболовства для Дальневосточного
рыбохозяйственного бассейна



В целях рационального использования водных биологических ресурсов, с учетом предложений специализированных научно-исследовательских рыбохозяйственных организаций, п р и к а з ы в а ю:

признать утратившим силу пункт 13.13 Правил рыболовства для Дальневосточного рыбохозяйственного бассейна, утвержденных приказом Минсельхоза России от 1 марта 2007 г. № 151 *.

Министр

А.В.Гордеев

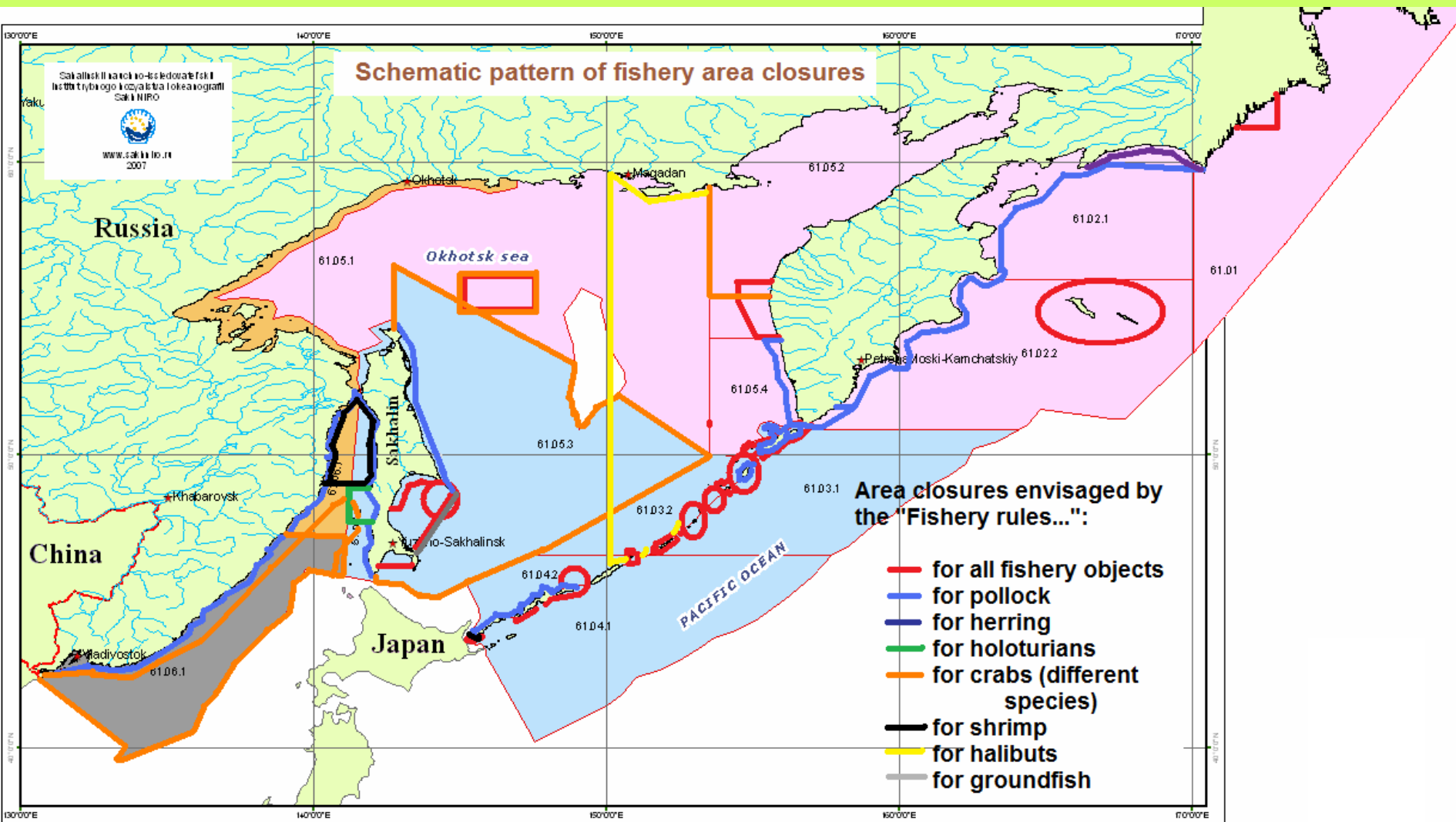
**The “Fisheries rules for the
Far-eastern basin” was
signed on 1 March, 2007.**

* Зарегистрирован в Минюсте России 27 апреля 2007 г., регистрационный № 9362.

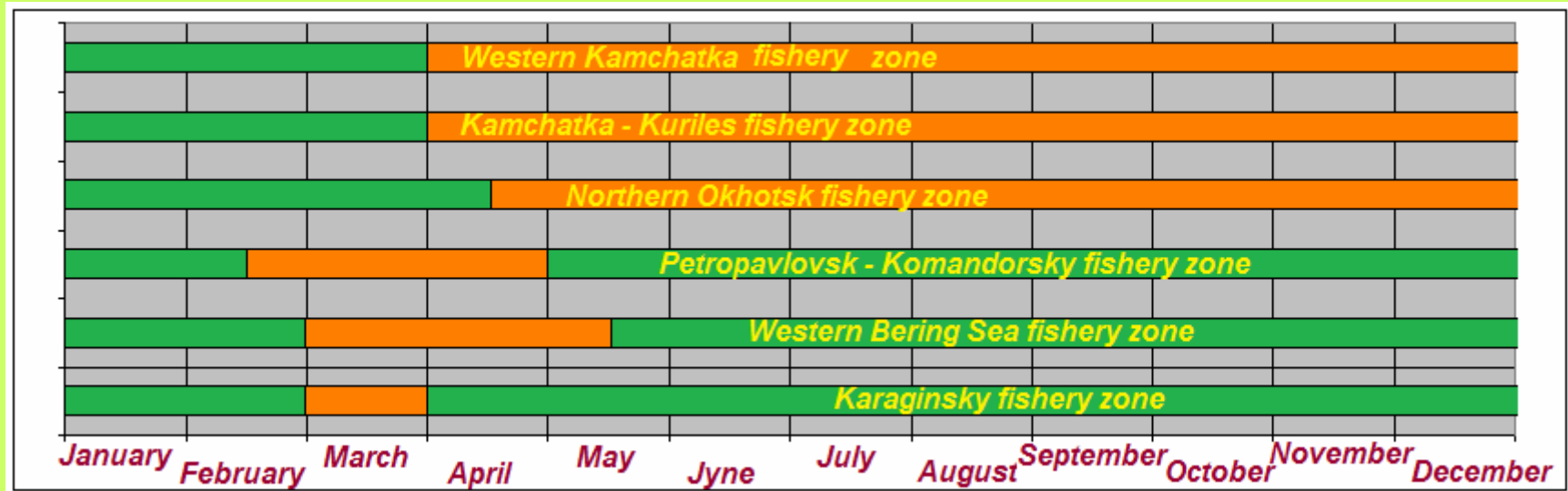
The “Fishery rules...” deals with

- ✓ commercial fishery in the territorial waters, on the continental shelf, and exclusive economic zone,
- ✓ commercial (including coastal) fisheries in the inner waters;
- ✓ amateurish and sport fisheries;
- ✓ scientific, research and control fishery;
- ✓ fishery for artificial propagation, reproduction, and acclimatization of biological resources;
- ✓ fishery in educational and instructive purposes;
- ✓ subsistence fishery of aboriginal nations of Extreme North, Siberia, and Far East of Russian Federation

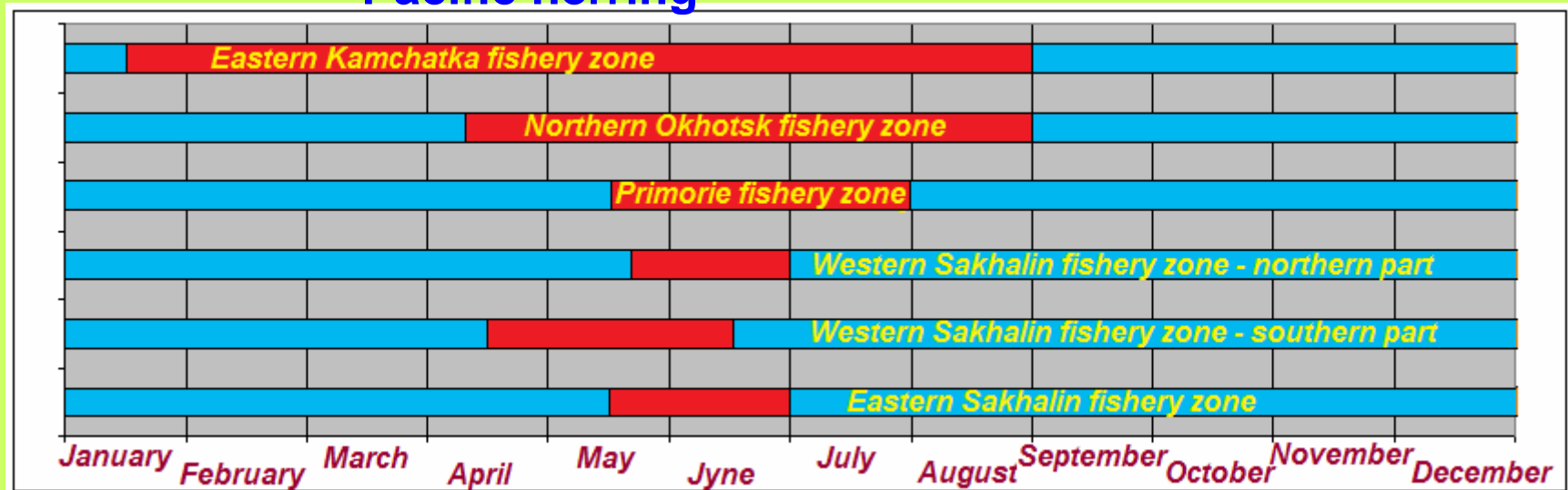
“Fishery rules...” envisage 54 permanent and 3 seasonal area closures for commercial fisheries for all species: three from them – for trawls, one – for bottom gillnets, others – for all gears but two with exception for small fishery vessels conducting coastal fishery and four with exception for Pacific salmon and kelp harvesting. There are additional area closures for some species



Seasonal fishery closures in the different zones of far-eastern seas, according to “Fishery rules...”, on example of: walleye pollock

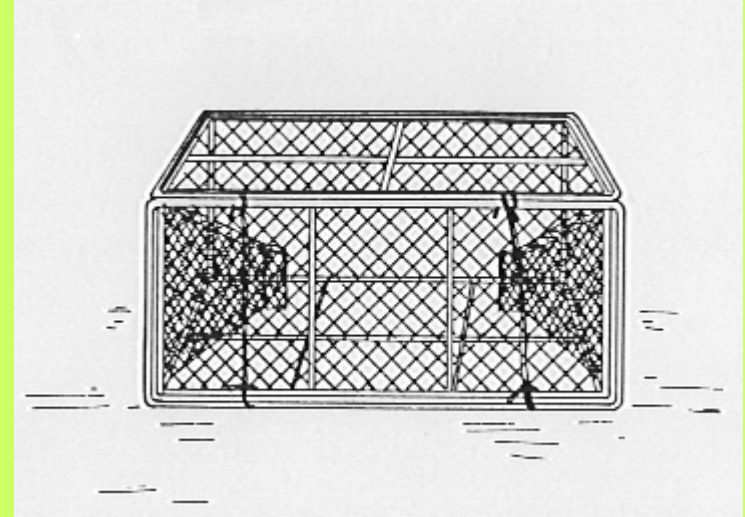


Pacific herring



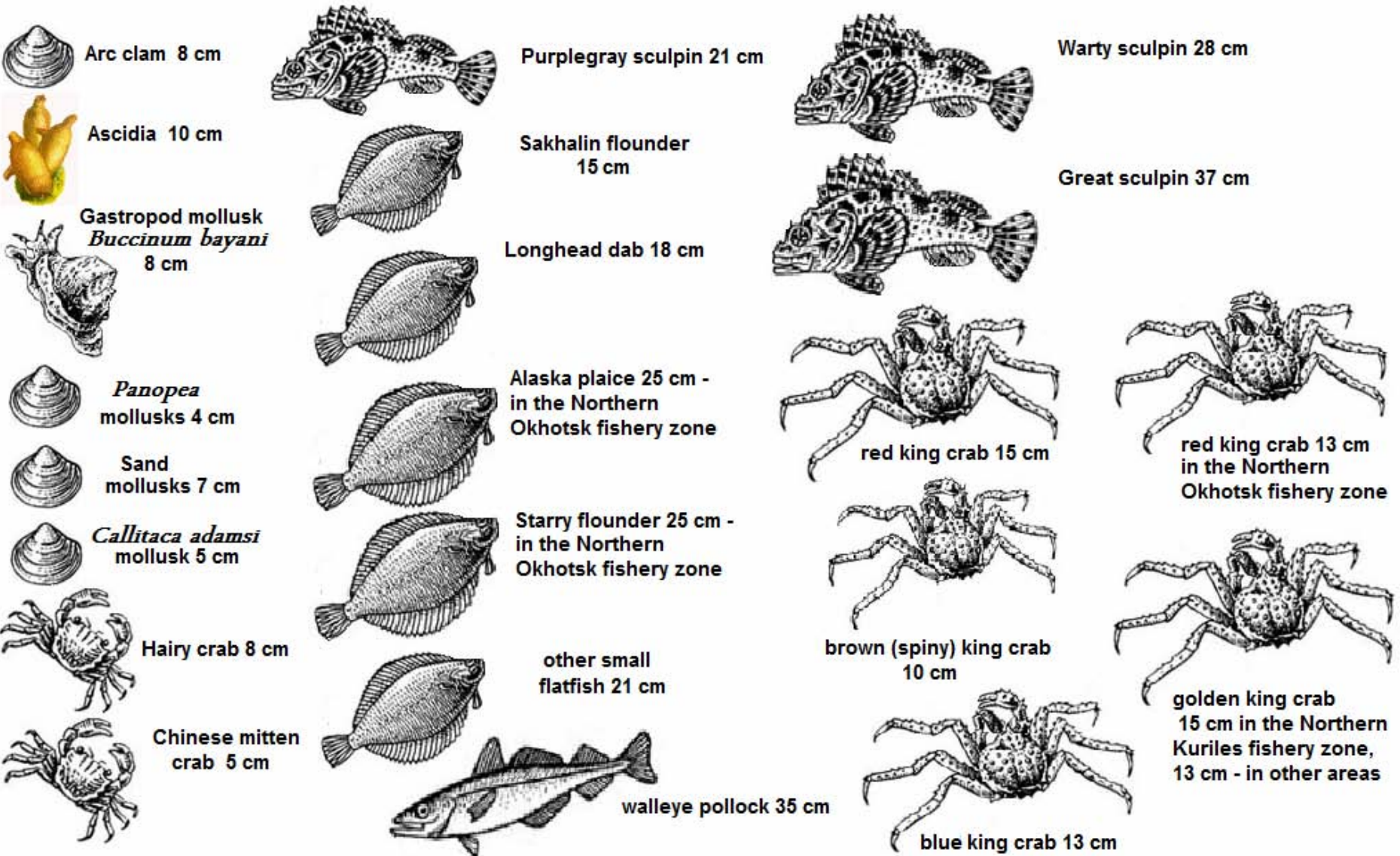
44 seasonal fishery closures deal with 20 species and groups of fishery objects

“Fishery rules...” envisage 26 prohibitions and limitations deal with fishery gears and method of catching, such as using for crab fishery any gear for exception of:



crab pot with cut out rectangle panel on a side, no less than 35 cm in width and 40 cm in height, which is connected to other part of net with a thread of plant origin at 2-3 mm in diameter, which is not imbued in matter preventing rot...

“Fishery rules...” envisage legal fishery size limitation for 85 fishery objects including local populations of the same species. About one fourth is shown below:



Permitted bycatch of non-target species is limited to 2% in weight (excluding marine mammals, crabs, and shrimp), and to a maximum 8% for undersized individuals in number for all specialized fisheries.



The new aspect is: Permitted bycatch of non-target species, which have not TAC established, is limited to 49% in a weight

Epigraph and sub-conclusions from fishery regulation issue:

“The TAC system, based on single-stock approaches, fails to account for interactions between different stocks caught together in the same fisheries. Continuation of fisheries for one species may undermine the conservation target for another and lead for increasing discarding. Mixed fishery considerations should also be included in setting annual TACs” (Penas, 2007).

1. Different fishery regulation methods are widely applied in the fishery management on the Russian Far East. TAC setting for all fishery objects and every fishery is not optimal approach. Situation can be changed through thorough prioritization of fishery regulation measures for different fishery types (e.g., trawl fishery on common pelagic fishes, coastal groundfish, etc), and a transition from single species management to fishery type regulations.
2. Russian fishery science possesses comprehensive knowledge on fishery resources composition, stock abundance and dynamics. Permanent multipurpose monitoring is necessary to improve a long-term forecasting.
3. Russian Far East fisheries currently possess all the preconditions for successful application of basic ecosystem-based principles.

Thank you for your attention!

