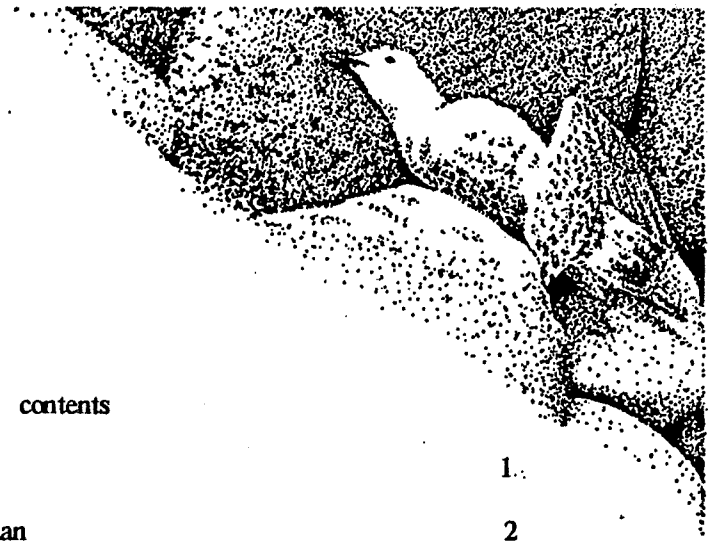
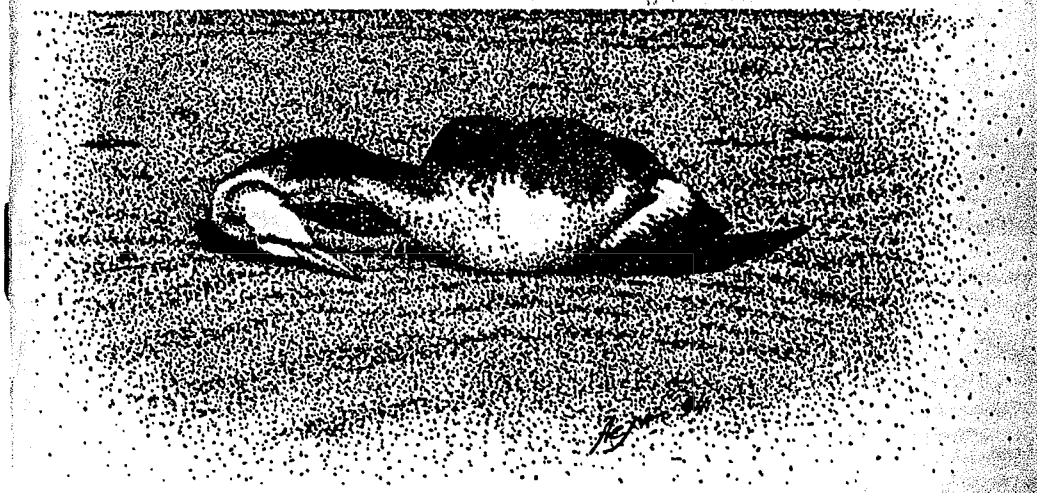


contents

Latvian Beached Birds Survey 1993.

Final report.



A. Kurochkin & V. Smislov.

Latvianornithologicalsociety.

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1.

Summary.

In this report materials of Latvian Beached Birds Survey during 1993 are given. The total distance of 1607 km of coast was covered during the year. Oil on the beach was detected mainly only on the coasts of Irbe strait (43% of covered coast in this region). The total number of 1482 beached birds were found, from which 79% were waterfowl, including 45.4% of gulls and 25.7% of sea ducks. 21% of all beached corpses were land birds including 14.5% of passerines. Proportion of oiled birds was in 36.6 times higher then during period before 1993. Oil rate for total beached bids was 17.6%, 52% for sea ducks, 20% for divers, 9.6% for raptors, 4.7% for swans and geese, 4.5% for gulls, 4% for dabbling ducks and 0.4% for passerines. The same as in previous period the highest numbers of beached birds were found during migration, mainly in spring. Gulls have third peak during breeding period. More then a half of oiled birds were found in february at Kolka cape (59%). Oiled birds were found all year round, but mainly befor the beginning of summer. Highest density of oiled birds was in Irbe srait. Corpses with oil traces were mainly; Velvet scoter - 41.9% from all oiled birds, Long-tailedduck-41.2% and Herringgull-8.8%.

2.

Резюме.

В отчете представлены материалы учета погибших птиц на морском побережье Латвии за 1993 год. В течении года учетом было охвачено 1607 км в разных частях Латвийского побережья. На обследованом побережье нефть была отмечена в основном в Ирбенском проливе - на 43% побережья пролива. Было обнаружено 1482 находки погибших птиц из которых 79% составляли водоплавающие, включая 45.4% чаек и 25.7% морских уток, 21% составляли наземные птицы включая 14.5% воробьиных. 17.6% всех находок были исследами нефти на оперении что в 36.6 раз выше чем за период с 1988 до начала 1993 годов. Уровень загрязнения составлял: 52% у морских уток, 20% у гагар, 9.6% у дневных хищников, 4.7% у гусей и лебедей, 4.5% у чаек, 4% у речных уток и 0.4% у воробьиных птиц, у остальных групп видов загрязнеенных птиц не отмечалось. Также как и за предшевствующий период, почти у всех видов основной пик гибели приходится на период весенней миграции, у ряда видов, в частности у чаек, морских уток, и почти всех у наземных птиц наблюдался также и небольшой пик гибели во время осенней миграции, у чаек четко выражен еще один пик после вылета молодых птиц в гнездовой период. Более половины загрязненных нефтью птиц было найдено в феврале у м. Колка (59%). Загрязненные нефтью птицы отмечались практически в течении всего года, но основная часть была найдена до начала лета. Наибольшая плотность находок птиц в нефти отмечалась в Ирбенском проливе. Со следами нефти в основном были: турпан - 41.9% от всех загрязненных птиц, морянка - 41.2% и серебристая чайка - 8.8%

3.

Introduction.

Oil pollution is one of the greatest threats to sea birds, and especialy in places were big numbers of waterfowl concentrate. Last investigations of Danish, Lithuanian and Latvian ornithologists found great concentrations of sea birds especially Gaviastellata, Clangulahyemalis, Melanittafusca and Alcatorda, in Latvian marine territory (Durinck J. et al., 1993, Stipniece A. 1992, Vaitkus G. in press). To assess the influence of oil pollution on birds, the Beached Birds Survey was organized.

First studies on Beached Birds Surveys in Latvia were started late in 1987. The main aims of these investigations at the begining were not only to assess sea birds mortality but to study coastal avifauna as well. These primary examinations showed big diference betwen counts of waterfowl and BBS, besides it was found that proportion of oiled birds is very small (Kurochkin A., Smislov V. 1994).

Low oil rates of beached birds were simply explained by lack of oil drillings in waters surrounding Latvia, and small number of oil tankers using Latvian waterways. After all BBS in other countries of Baltic sea displayd decreasing of oil pollution in eighties (Camphuysen C.J., van Franeker J.A. 1992.).

It was suggested that high human activities in plants and towns near Riga gulf are responsible for death of not oiled beached birds. To find out other reasons of death, special investigations were planed to be made during 1993. Some financial support was received from Swedish Ornithological Society, that promoted beter coverege of coast. But in any way it was not enough to make special analysis. However the results of BBS in 1993 showed sharp increase of oil pollution in Latvia. In this paper, the results of Latvian Beached Bird Survey made during 1993 are given.

The surey during 1993 would not have been so successful without participathion of several members of Latvian Ornithological Society in the fieldwork. Authers would like to thank; Bauga I., Girgensone I., Irbe A., Kalninsh M., Kazubernis J., Lebus R., Lipsberg J., Lukshevich E., Matrozis R., Oigus I., Platais A., Rachinskis E., Savich F., Stipniece A., Vintulis V.. Finally, great thaks to Antra Stipniece for help in organizing late-winter surveys.

4.

Methods.

All data was colected by foot counts each month on diferent stretches of coast, with the exception when beaches were covered with snow or ice. It was planned to cover all coast of Latvia at least 3 times during 1993, including late winter counts during IBBS. Except that monthly counts on constant rout (20 km), to clear up anual dinamics.

The following BBS records were collected:
1. the condition of beached corpse.
2. number of unoiled and oiled corpses (the degree of oiling if oiled).
3. sex and age of dead bird (when it was possible to identify).
4. reason of death and content of gizzards (if possible).

Besides that information about presense of oil on the beaches was gethered.

5.

Study area

5.1.

.Sea coast division.

The sea coast of Latvia, with total length 484 km was divided into 5 geographic regions (see figure 1).

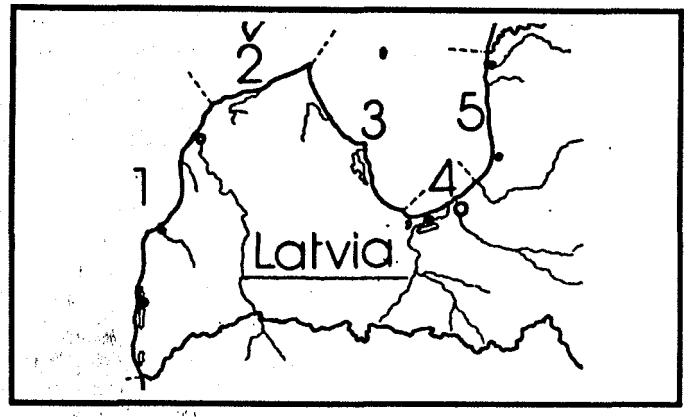


Fig.1.

Baltic sea coast (region 1.), total length 180 km from Lithuania to Ovishi cape, sandy, some time gravel beaches. In this region two big harbors located at Liepaja city and Ventspils oil terminal.

Irbe strait (region 2.), total length 56 km of sandy beaches, from Ovishi to Kolka cape.

Western coast of Riga gulf (reion 3.), total length 107 km of mixed sandy, gravel and some times stony beaches from Kolka to Ragaciems cape. Thre fishing harbours located in this region: in Roja, Mersrags and Enguresettlements.

Southern coast of Riga gulf (region 4.). 56 km of sandy beaches whith mouths of thre big rivers: Lielupe, Daugava and Gauja. Big port located in mouth of river Daugava in Riga city.

Eastern coast of Riga gulf (region 5.), total length 85 km from Gauja river to Ainazhi at Latvian - Estonian border, includ one fishing harbor in Salacgriva town. Beaches are both sandy and gravel.

NW-SW winds are most comon in Latvia, thees winds must be considered as onshore mainly for 1 and 5 regions, and NW winds are onshore for 2 and 4 regions.

5.2.

Concentrations of waterfowl.

Concentrations of waterfowl and sea birds are studied very poorly. To the end of eighties great problems with waterfowl counts at sea coast were conected with the borderland of former USSR. However available data explains the uniquense of Latvian waters and seashore.

Tab.1. Wintering waterfowl in sea.

species	recorded	estimated
G.spp.(stellata)	100 - 400	17000
C.olor	500 - 800	
A.platyrhynchos	700 - 1600	
M.merganser	800	
M.serrator	100	
B.clangula	2500 - 3200	
C.hiemalis	4000 - 6500	682000
M.fusca	8000	137000
M.nigra	100 - 400	
L.canus		10000
L.argenttatus		12000
A. torda		6000

Winter.From recent years regular mid-winter counts have been carried out (Stipniece A. 1992.). Offshore concentrations of wintering sea birds were studied in 1992 and 1993 (Durinck J. et al., 1993; Vaitkus G. in press.). Big numbers of G.stellata, C.hyemalis, M.fusca and A.torda were recorded in Irbe strait and Riga gulf, see table 1. (Durinck J. et al. 1993). Extreamly high dencities were recorded after heavy ice-situation with maximum birds per km^2 up to 13000 of C.hyemalis and 8000 of M.fusca (VaitkusG.inpress.).

Spring. Only few investigations were made during spring migration in the end of fifties and in the end of eighties in the south of Latvian Baltic sea coast (Леинь Г., Каспарсон Г. 1961.; Tauriņš E. Švarcbergs M. 1960; Celminsh A. 1989; Celminsh A. et al. 1990.). Over 180000 of sea bird were recorded during march - may 1988 only from one point in Pape, most numerous were C.hyemalis, M.fusca, G.stellata / arctica and M.nigra (Celminsh A. et al. 1990). In may 1993 during IMAWEL seminar extreamly high numbers of A.marila and C.hyemalis were recorded in northen part of Riga bay (Durinck J., et al. 1993).

Summer.Several counts of moulting sea ducks were caried out in seventies and 1991 (Виксне Я., Бауманис Я. 1976; Vīksne J. 1982; Stipniece A., Viksne J. in press.). The most numerous moulting sea ducks were B.clangula up to 20000, M.nigra to 13000 birds and atleast 500 of moulting M.serrator were observed.

Autumn. Counts of migraiting birds were made in the end of fifties in different places of Latvian sea coast (Mihelsons H. et all. 1960; Tauriņš E., Švarcbergs M.1960). Most numerous were Gaviaspp.,andC.hyemalis.

Above mentioned on Latvian sea coast two ornithological reserves located at Mersrags (region 3.) and Kuivizhi (region 5.). Besides Slitere state nature reserve is contiguous to the coast in regions 2 and 3. After Conservation Plan For Latvia (WWF project 4568) 13 sites on the sea coast were determinaed as Biologically Rich NatureObjects.

6.

Coverege and reliability.

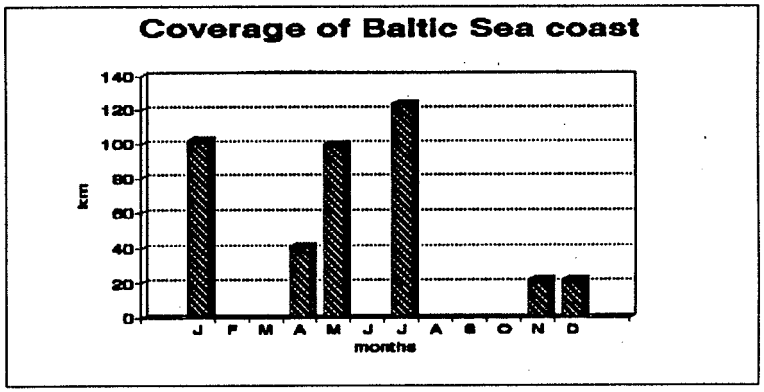
The total distance of 1607 km was covered by the survey in 1993 including 223.5 km surveyed during IBBS in February and surveys on constant route (20 km long) each month. It took 82 days of field work. Because of bad wether conditions only few surveys were made in March, November and December. 3% of surveys during the year were made under bad wether conditions andmustbeconsideredunreliable.

1 and 2 regions were covered mostly during 7 several days trips that were made in January, April, May, Jul and November (see fig. 2 and 3). During 1993 228% of total distance of Latvian Baltic sea coast and 214% of Irbe strait coast was covered.

279% from total west coast of Gulf was covered during the year. The best coverege was made in February and April - Jul (see fig.4).

Southern part of the Gulf is most studied region (fig. 5). 685% of region was covered. The best coverege was in February and Jun.

Fig.2.



350% of eastern coast of Riga Gulf was covered. Best surveys were made in February and May (fig. 6). Surveys from March andOktoberareabsent.

Fig.3.

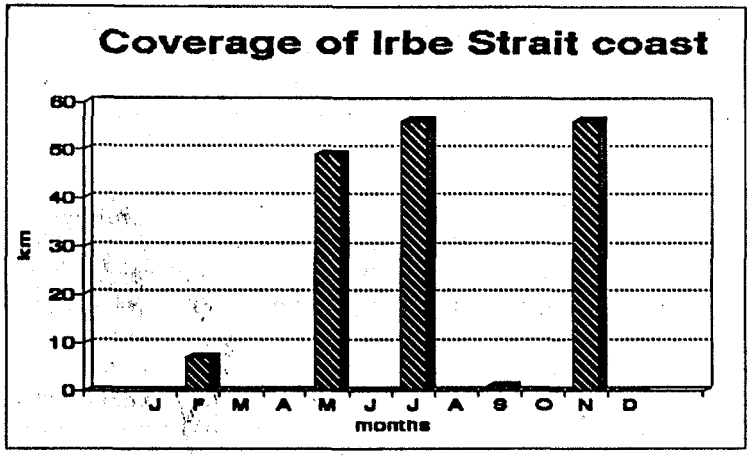


Fig.4.

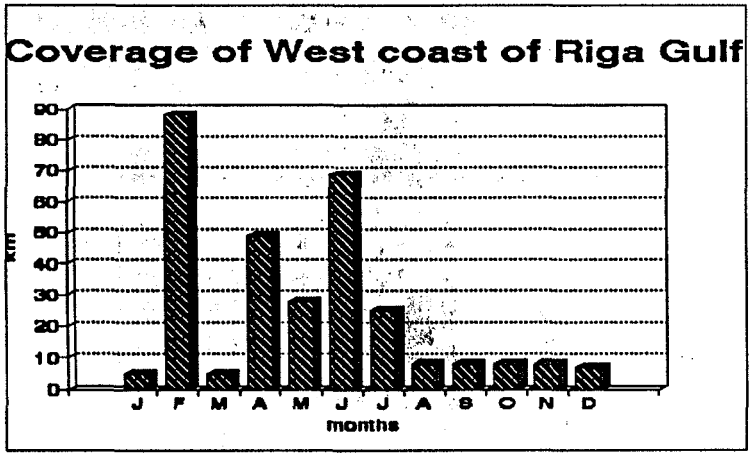


Fig.5.

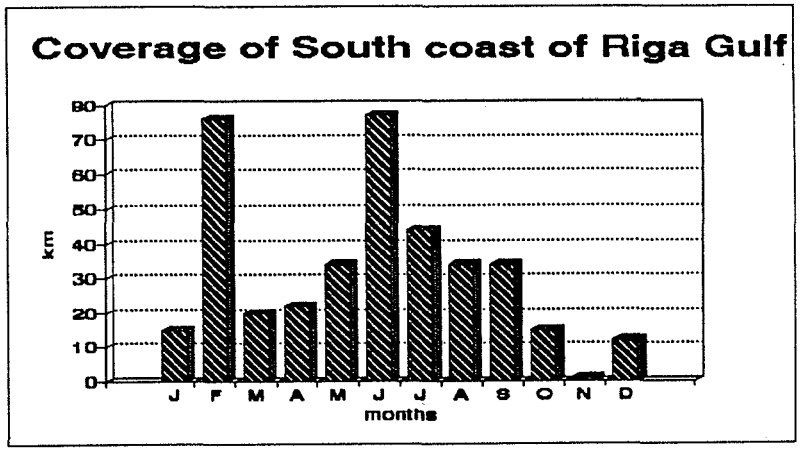
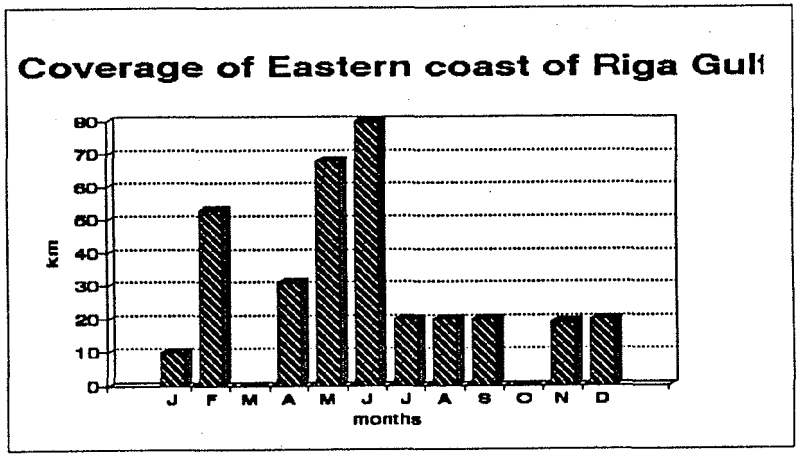


Fig.6.



7.

Results.

7.1.

Presence of oil on the beach.

During 1993 oil pollution on the beaches was detected mostly in regions 1 and 2, in Riga Gulf oil was recorded only in few cases and in wery scanty volume. The Irbe strait was most polluted region, the frequency of oiled beaches there was 43% of covered coastline (for the previous period from 1990 to the end of 1992 only 6% of covered coast in this region were with oil). Only 1% of covered coast in region 1 was with oil on the beach.

7.2.

Proportion of oiled birds.

From total number of 1482 beached birds of 78 species (including land birds) 17.6% were with oil on fethers. However different groups of bird species showed quite different proportions of oiled corpses. The total numbers and numbers of oiled birds in different regions are given in appendix 1. The proportions of oiled birds of different groups of srecies are given in table 2.The results from the table show that most polluted waterfowl species were sea ducks, and in less extent divers and gulls. From land birds only few raptors and passerins were found with oil traces on fethers. In comparision with the previus period increase of proportion of oiled corpses was actually in all bird groups except auks and owls. Oil rates of beached land birds rised in 3.4 times during 1993. Oil rates of beached waterfowl rised at the same time in 29 times.

From earliest studies (A. Kurochkin, V. Smislov 1994 .) we know that birds which prefer to keep close to coast, are usually found beached more often then pelagic species. The main reason of this is that majority of corpses of birds that died far from coast

Table2.Proportiponsofoiledcorpses(%).

Species	1993	1988-1992
Gavilidae	20	2.4
Podicipitidae	0	0
Phalacrocoracidae	0	-
Ciconiidae	-	0
Anatidae	47.8	1.4
Swans, Geese	4.7	1.8
Dabling ducks	4	0
Sea ducks	52.6	1.2
Accipitridae	9.6	0
Falkonidae	0	0
Tetraonidae	-	0
Phasianidae	-	0
Gruidae	-	0
Rallidae	0	0
Charadriidiae	0	0
Scolopacidae	0	0
Stercorariidae	-	0
Laridae	4.5	0.4
Alcidae	0	9
Columbidae	0	0
Cuculidae	0	0
Strigidae	0	3.3
Caprimulgidae	-	0
Apodidae	0	0
Picidae	-	0
Passeriformes	0.4	0.35
Total waterfowl	20.6	0.71
Total Land birds	1.2	0.35
Total	17.6	0.48

are destroyed on there way to beach. Because of this, corpses of pelagic species are more destroyed then corpses of coastal species wen found on the beach. For example during 1993 52% from total beached black heded gulls were undestroyed, whereas only 31% of beached divers where more or less intact. The real proportion of oiled corpses must be higher then percentes given in table 2, because that data includes complete numbers of findings, containing uncomplete corpses. It is possible to calculate real proportion only for 4 most comon species (other species have not relieble sample size of complete corpses). So 0.91% of all beached black heded gulls were oiled (N -329) and 1.16% if count only complete corpses (n - 171). For the Long tailed duck 45.3% of all beached corpses and 64.4% of complete corpses (accordingly N - 236 and n - 118 corpses). Herring gull had 10.2% and 11.3% (accordingly N - 226, n - 97). Velvet scoter had 85% and 91% (accordingly N - 128 and n - 115).

7.3.

Annual dynamics of beached birds densities.

Despite that actualy all groups of beached birds had peak of density during spring migration, annual dynamics of various groups differed strongly. Bigest fluctuations of dynamics had land birds with main peak in april (fig 7.) and small peak during autumn migration. Dynamics of beached land birds is approximately the same then during the period 1988 - 1992. The densities of land birds this spring were smaller then erlier years. High densyies of beached passerines during spring migration indicate importance of Latvian sea coast as flyway of this group.

From total number of waterfowle (78.6% from total beached birds) more then a half were Gulls (57.7%) and therd were Ducks (37.2%). Bouth groups were recorded beached all year round (fig 8). Gulls were beached more uniformly (0.2 - 0.3 corpses / km, fig 9.) with 3 peaks; during breeding period (mainly Black heded gull) and during spring and autumn migrations. Densities of beached ducks fluctuated more sharply (fig 10.) also with two peaks during migration and sharp peak in

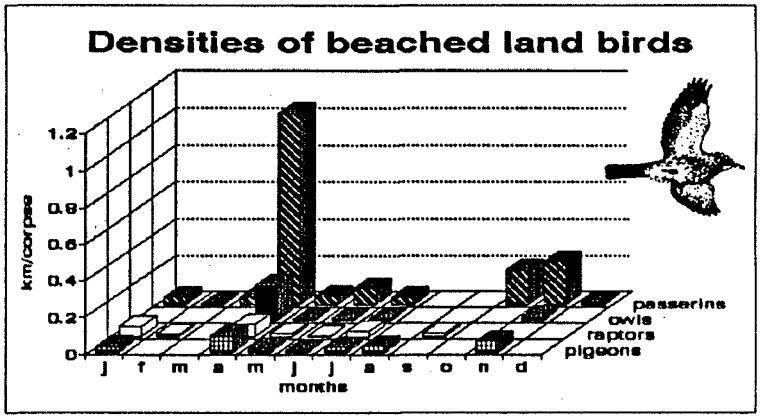


Fig.7.

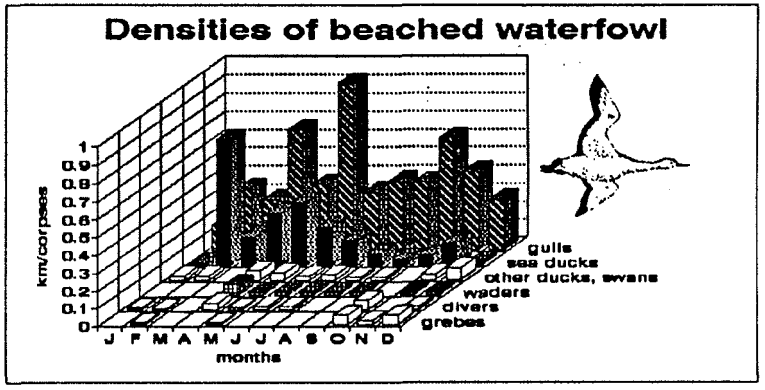


Fig.8.

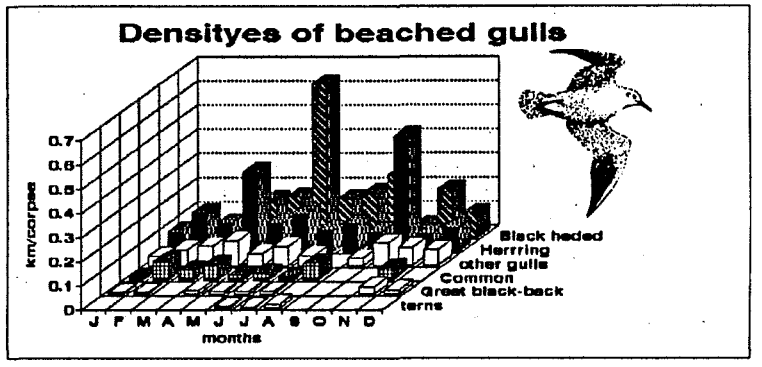


Fig.9.

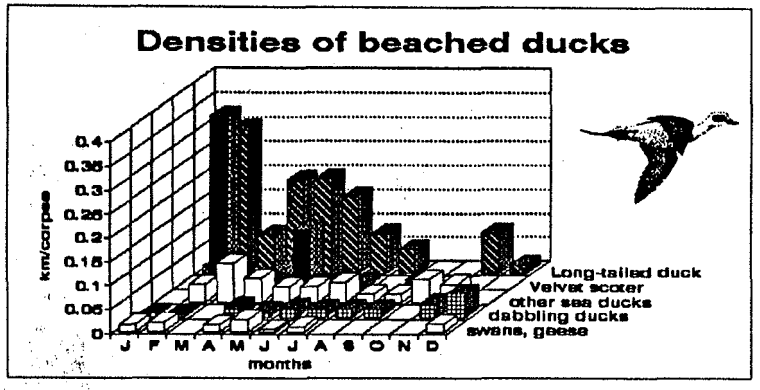


Fig.10.

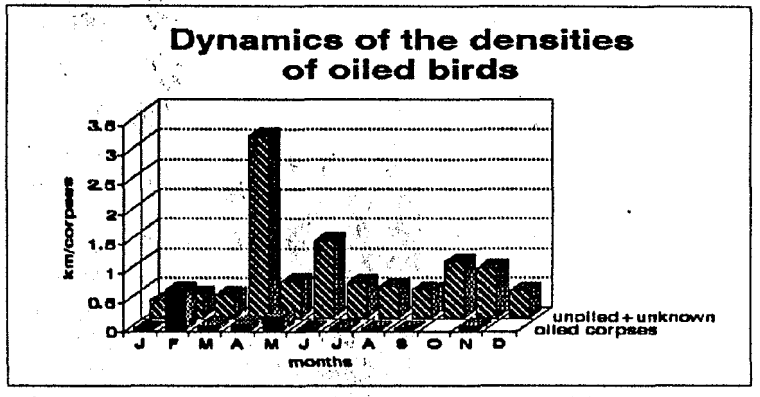


Fig.11.

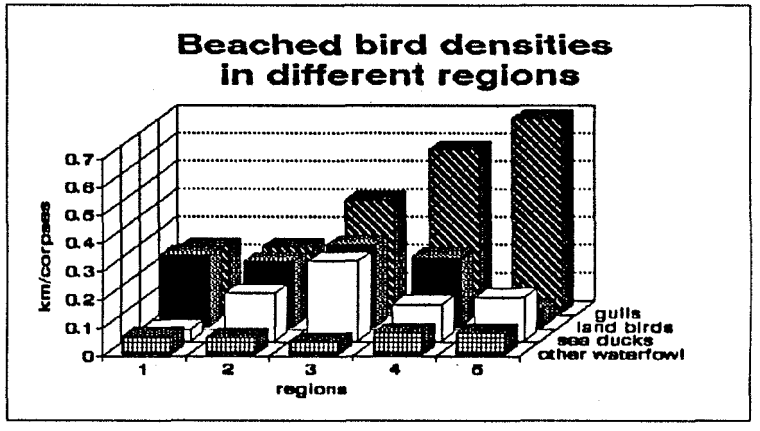
february caused by oil spil near Kolka cape. Most common beached seaducks were Long tailed duck (0.15 corpses / km in average) and Velvet scoter 0.08 ccorpses /km in average), in addition to that these two species made 60% of beached birds in february. Oiled birds were found beached during all year round except oktober and december (fig 11.), that maybe explained by low coverege these months. Findings of oiled birds were unequal during the year; bigest numbers (59%) were found during fesruary at Kolka cape (border of regions 2,3). Except february relatively high densities of oiled corpses were during march, april, may (0.08-0.23oiledcorpses/km).

7.4.

Regional distribution of beached birds.

Densities of beached birds in different regions are showen on fig. 12. Density of beached land birds was approximately the same in all regions (0.25 corpses/km) except eastern part of gulf. Low density of land birds in 5 region can be explained by small coverege during sping migration. Highest density of beached sea ducks was near the places of concentrations in region 3 (0.29 corpses / km if exclude numbers of dead in Kolka accident in february). Densities of beached gulls increased from west to east (in regions 1 and 2 - 0.23 corpses / km and on the contrary in gulf up to 0.7 corpses / km), mainly because of nearness of big colonies of Black heded gull at Engure, Kanieris, Babite and Matsalu and also because of big concentrations of this group at numerous fishing setlments in the gulf. Highest density of oiled corpses during the year (if exclude numbersof birds dead in Kolka accident) was in Irbe strait (region 2 - 0.13 corpses / km) and lowest density on the Baltic sea coast (region 1 - 0.029 corpses/km), seefig.13.

Fig.12.



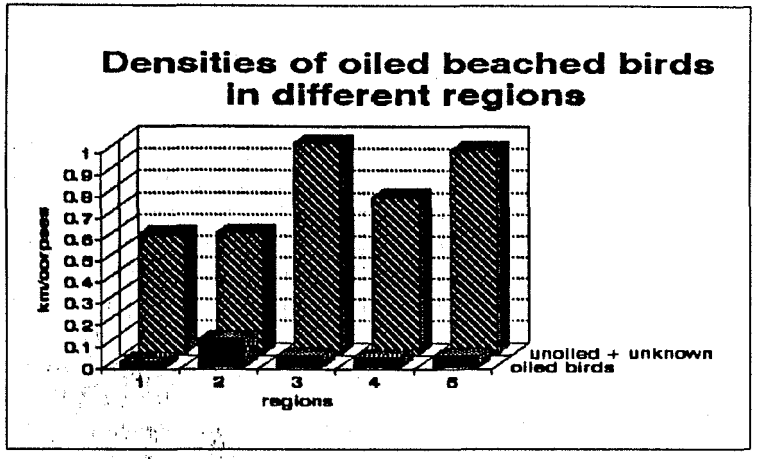


Fig.13.

7.5.

Species composition.

79% of all beached corpses were waterfowl (for the previous period only 45%, such big difference can be partly explained by increase of mortality of sea birds caused by oil pollution), mostly gulls - 45.4% and sea ducks - 25.7% (see fig.14). From gulls most numerous were Black heded gull (329 findings) and Herring gull (226 findings). Sea ducks were represented by Long tailed duck (236 findings) and Velvet scoter (128 findings). Land birds were represented by passerines 14.5% of all beached birds (mostly thrushes - 5 species - 132 findings).

From total number of oiled birds 98.5% were waterfowl (see fig 15.). Mostly 3 species were found oiled; Velvet scoter - 41.9%, Long tailed duck - 41.2% and Herring gull - 8.8%.

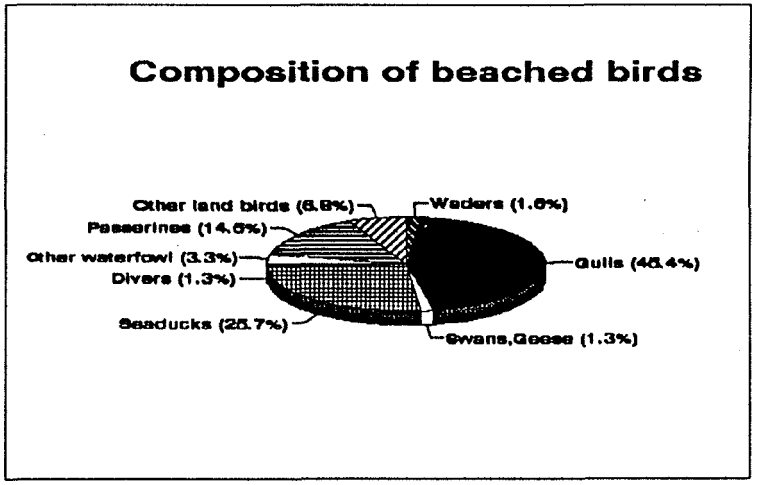


Fig.14.

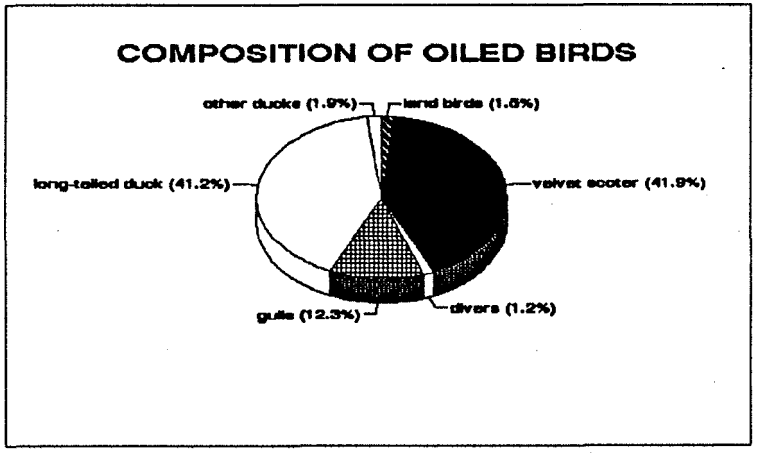


Fig.15.

8.

Discusion.

Ornithological investigations last years pointed that Latvian marine territory holds sites were great numbers of sea birds concentrate during different seasons of the year. In certain conditions densities of waterfowl in open sea can be more then 10000 birds / km^2 and thereby sea birds become very vulnerable from oil pollution. Dynamics of densitties of beached birds since 1988 is given on fig. 16 (with the excepton of numbers died in Kolka accident february 1993). On the Baltic sea coast and Irbe strait scanty numbers of corpses of beached birds contaminated with oil were found from the begining of survey in 1988. It is connected with presence of such big harbours like Ventspils, Liepaja and Klaipeda. And in contrast oiled corpses in Riga gulf were found rather irregulary. From the begining of the 1993 densities of oiled beached birds sharply increased and only on the baltic sea coast from Lithuania to Ventspils it remined the same. In the Gulf densities of oiled birds increased from 0 - 0.015 corpses/km to 0.044 - 0.06 corpses/km. Maybe some numbers of oiled birds and oil floated in Riga gulf from Irbe strait. As it was sed above the highest density of oiled beached birds and oil on the beach was in Irbe strait.

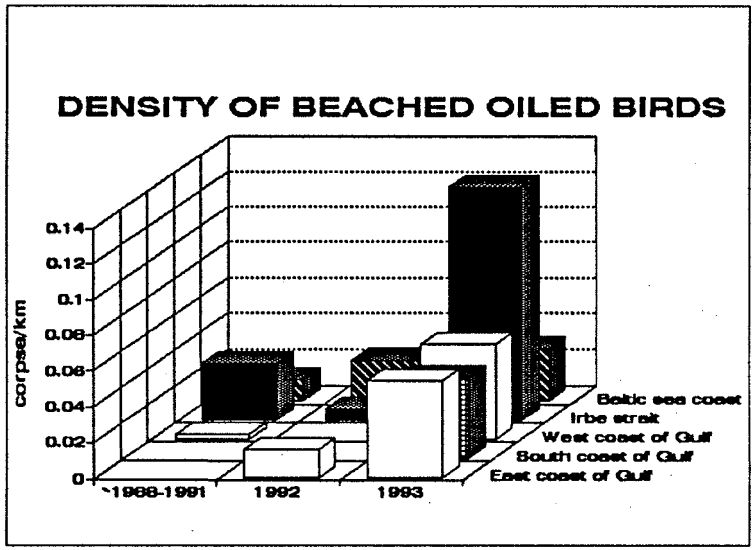
Very strongly changed proportion of oiled and unoiled corpses. for waterfowl it increased in 29 times, mainly because of sea ducks for which proportion increased more then forty times and was 52% of all beached corpses. It is necessiry to mind that these calculations includes numbers of uncompleat corpses, on which it was impossible to identify presense of oil (see chapter 5.2.). As in other countryes (Camphuysen C.J., van Franeker J.A. 1992; Joenson. A. 1972.) main part of oiled birds was found in first half of the yar and mostly in february.

It seems that Ventspils harbour that is situated at 20 km from Irbe strait is main source of oil pollution in Latvia. It is possible to suggest that in Estonian side of Strait on Saarema island densities of beached oiled birds are the same or maybe biger.

There may be two possible reasons that influenced on level of oil pollution in Latvia. In first place it can be increase of ternover of oil by sea in area. We do not dispose exact data about oil ternover in republic, but it is known that oil is main part of Latvian export and at the same time there no producers in country. In second place it can be cessation of aerial surveillance for oil slicks since begining of 1993. No doubt both reasons can influence on level of oil pollution.

Despite that Latvian sea coast (except Irbe strait) is not polluted by oil so heavely as in North sea area, tendencies of increasing oil pollution evoke troubles. Last time activities for bilding new oil terminal in Liepaja in Latvia and Butinga in Lithuania and reserch of sea oil rised in Latvia. Such activities can not uninfluence on oil pollution level.

Fig.16.



9.

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Appendix 1. Beached birds and numbers of oiled corpses (_) in 1993.

species \regions	1	2	3	4	5	Total
Gavia spp.	2		1(1)	2		5(1)
G.arctica					1(1)	1(1)
G.stellata	4(1)	1		3	6(1)	14(2)
Podiceps spp.	1					1
P.cristatus	1		1	3	3	8
P.grissegena		1				1
P.carbo				1		1
Anatidaespp.	3	4	5(1)	5	10(1)	27(2)
Cygnus spp.	2	3	1		1	7
C.olor	5		1	4(1)	2	12(1)
C.cygnus	1					1
B.bernicla			1			1
T.tadorna					2(1)	2(1)
A. platyrhynchos	3	2	3	4	6	18
A.penelope					1	1
A.crecca	1			1		2
A.querquedula	2					2
Aythya spp.	2					2
S.mollissima	1	1				2
Mellanittaspp		1			1	2
M.nigra		2	3	1(1)		6(1)
M.fusca		6	117	1	4	128
			(103)	(1)	(1)	(109)
B.clangula			3	5	1	9
C.hyemalis	9	24	123	37	34	236
		(14)	(87)		(6)	(107)
Mergus spp.					1	1
M.merganser			1		1	2
M.serrator			1			1
Accipitridae spp.				1		1
M.milvus	1					1

species \regions	1	2	3	4	5	Total
A.nisus	1	2	2	2		7
A.gentilis			1			1
B.buteo	7(2)	6	2		2(1)	17(3).
B.lagopus	2					2
A.clanga	1					1
C.aeruginosus				1		1
F.columbarius					1	1
F.atra			1	1		2
H.ostralegus				1		1
P.squatarola				1		1
V.vanelus		2	1			3
C.alpina		1				1
P.pugnax	1					1
S.rusticola	1		3	8	5	17
G.gallinago	1		1			2
Larus spp.	16(1)	10	12	23(1)	22	83(2)
L.ridibundus	18	7(1)	71	112(1)	121(1)	329(3)
L..minuttus	2	1			1	4
L.argentatus	47(6)	13(2)	27(1)	72(9)	59(5)	226(23)
L.fuscus	1(1)	1	3	2	1	8(1)
L.marinus	3	4	2	2	6	17
L.hyperboreus				1		1
L.canus	7	3	6	11(3)	25(1)	52(4)
R.tridactyla					1	1
S.hirundo				1	1	2
S.paradisaea	1					1
A.torda	1			2		3
U.aalge	1					1
C.livia	11	2	1	2	1	17
C.palumbus	10	6	2	5		23
C.canorus				2		2
Strigidae spp.					1	1
A.otus	25	1	2	1	2	31
A.funereus				1	1	2

Species \ rigions	1	2	3	4	5	Total
Paseriformes spp.	4	1				5
Alaudidae spp.	1					1
A.arvensis	2	1	5	10	1	19
L.arborea	1					1
H.rustica					1	1
Anthusspp.	1			1		2
A.trivialis				1		1
A.pratensis		1	2			3
M.alba					1	1
L.excubitor			1			1
Locustellaspp.			1			1
E.rubecula	1				2	3
Turdus spp.	2	5	2	3		12
T.merula	8	6	14	23	3	54
T.pilaris	2		6	8	2	18
T.iliacus	4	2	5	3	2	16
T.Philomelos	5	2	7	9	2	25
T.viscivorus			3	4		7
R.regulus	1					1
A,caudatus		1				1
P.nivalis			1			1
F.coelebs	1		6	7		14
P.purrhula		1	3	4		8
S.vulgaris				1		1
Corvus spp.	3	1		2		6
P.pica	1(1)	1				2(1)
C.frugilegus	3		3			6
C.corone	2		3	3	2	10
C.monedula	4		3	1		8
Total beached birds	241	116	488	297	341	1482
Total oiled birds	(12)	(21)	(193)	(17)	(18)	(261)