Ministry of Agriculture of Russian Federation
Federal Services for Veterinary and Phytosanitary Surveillance

Federal Governmental Budgetary Institution
Federal Center for Animal Health (FGBI ARRIAH)

AI related activities in ARRIAH

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Summary on HPAI epizootic situation in Russia

- **HPAI outbreaks (237 in total) have been reported in 24 regions of the Russian Federation**

  2005 – 117 (10 regions)

  2006 – 93 (16 regions)

  2007 – 23 (5 regions)

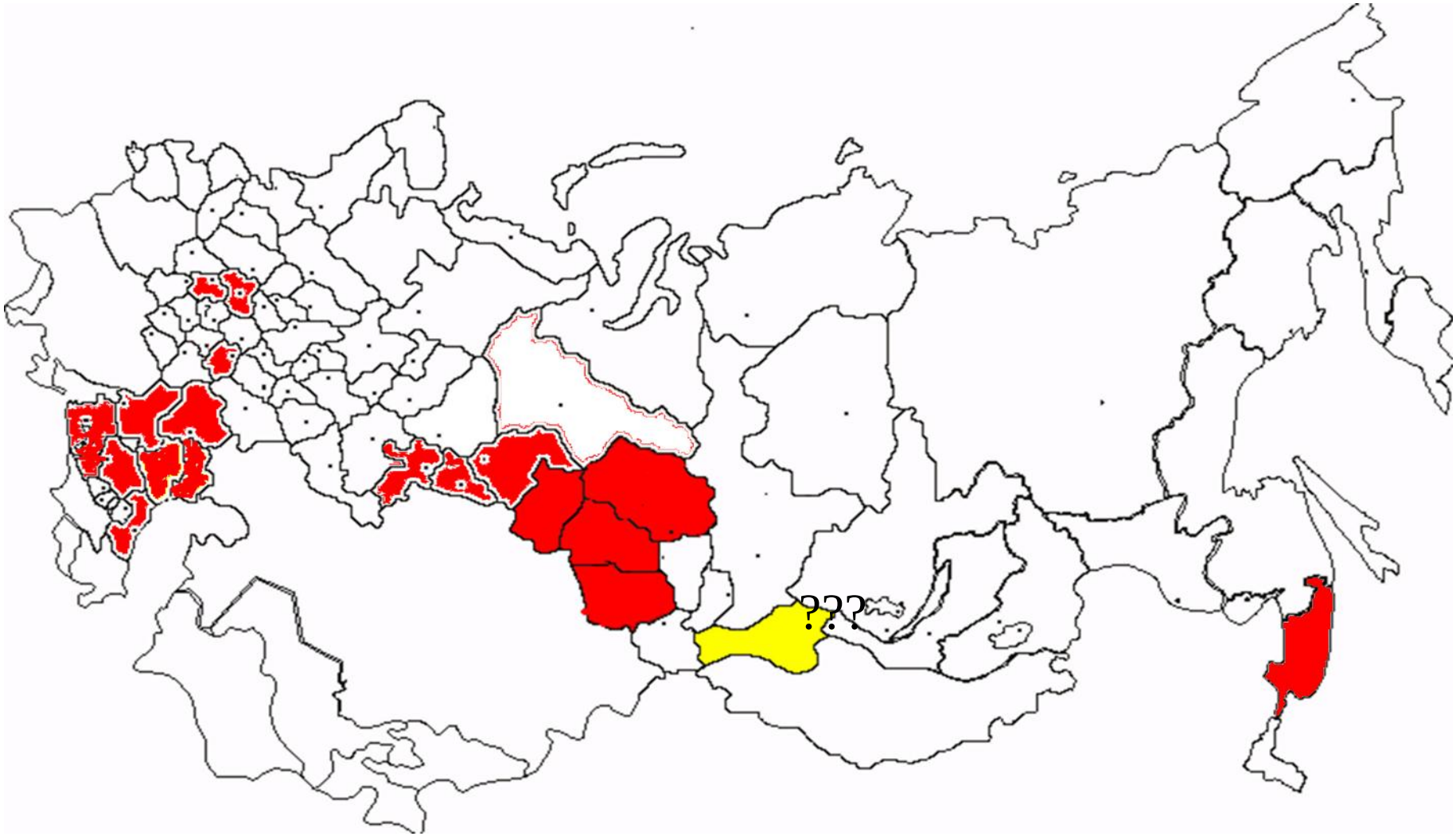
  2008 -- 1 (1 region)

  2009 – 2 (2 regions – only wild birds)

  2010 - 1 (1 region– only wild birds)

  2011-2013 – no cases, no detections
- **~ 3,0 million birds died/destroyed, 9 commercial farms affected**
- **No human cases, nevertheless cases in Mammals (cats)**
- **All Russian H5N1 HPAIVs isolated in 2005-2007 belonged to clade 2.2. , since 2008 to clade 2.3.2. (2.3.2.1)**

HPAI affected territories in Russian Federation in 2005-2008



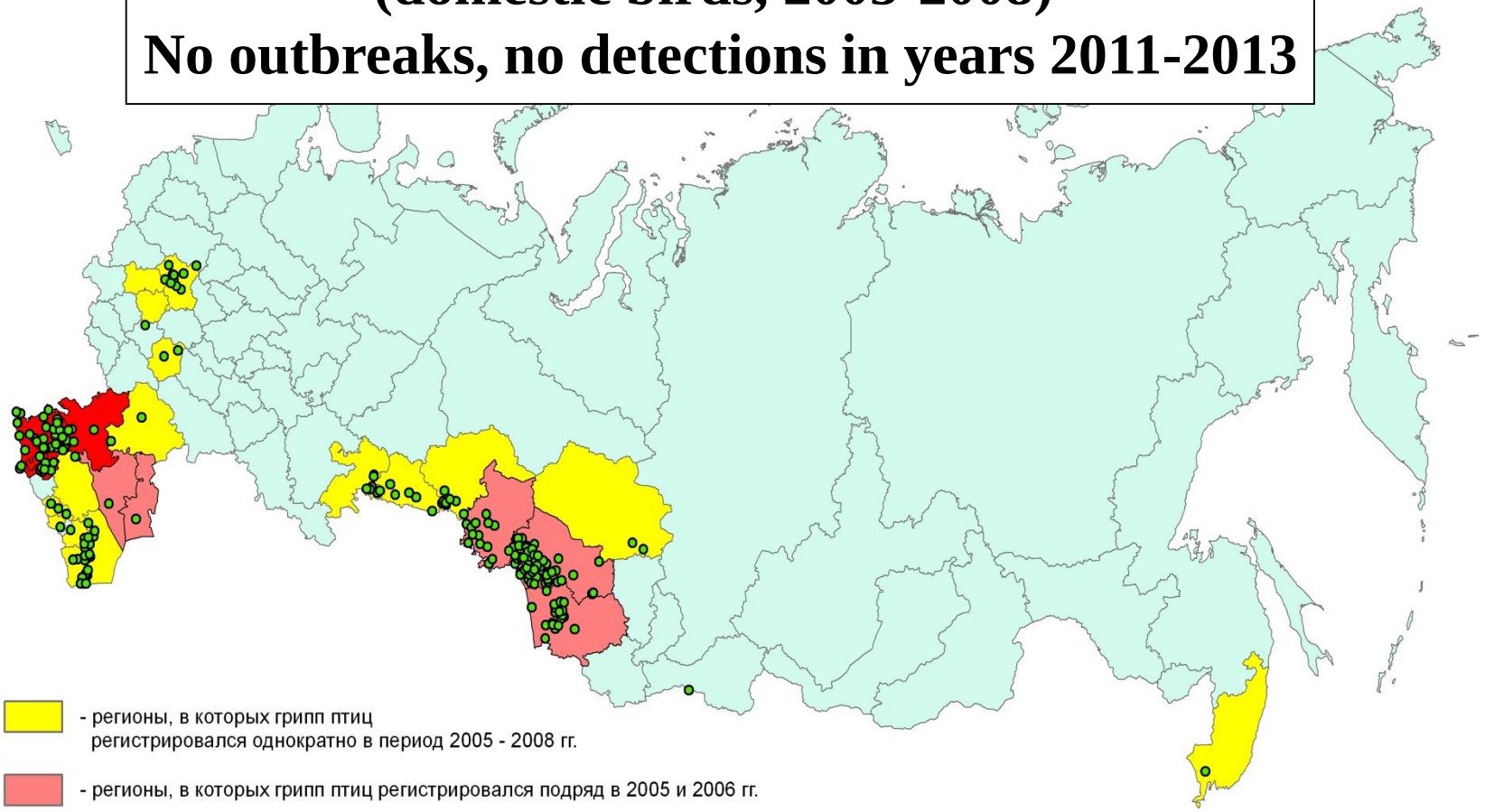
Avian influenza in Russia in 2005-2008
Control measures

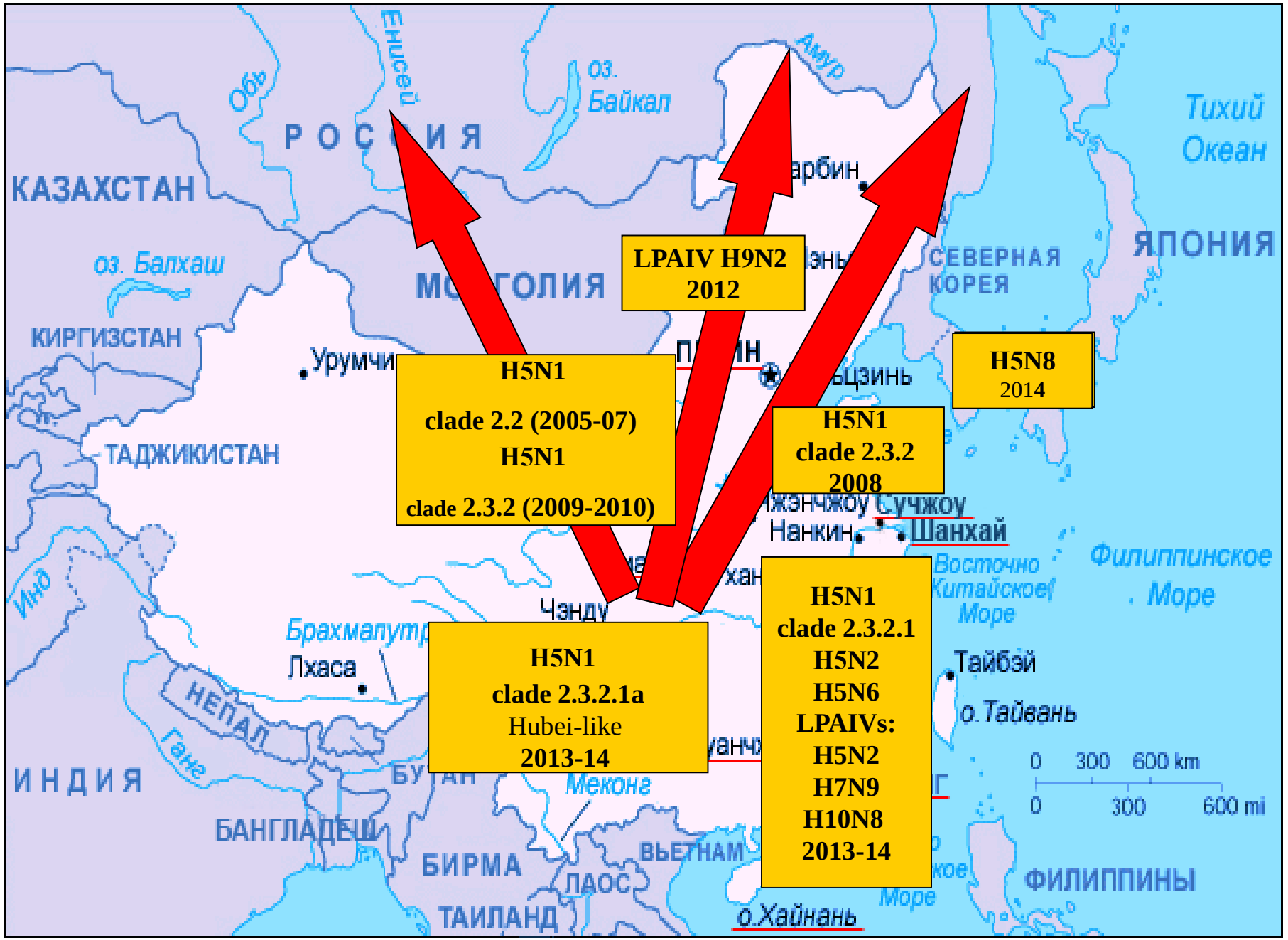
- **Quarantine, depopulation, disinfection**
- **A ring vaccination/revaccination around outbreaks**
- **Vaccination of poultry and other captive birds in zones of high risk since 2006 with oil-based killed vaccine H5N1**
- **Since 2010 vaccination funded by federal budget is limited by earlier affected territories in Siberia, South of RF and Far East, not all the country**

Vaccination poultry in backyards and open-type farms

- 2006 – 106 million birds
- 2007 – 97,9
- 2008 – 82,3
- 2009 – 78,9
- 2010 – 59,4
- 2011 – 30,07
- 2012 – 22,8

Highly Pathogenic Avian Influenza in Russia (domestic birds, 2005-2008) No outbreaks, no detections in years 2011-2013




Енисей
Обь
оз. Байкал
Амур
Тихий Океан
РОССИЯ
КАЗАХСТАН
Харбин
оз. Балхаш
МОНГОЛИЯ
ЯПОНИЯ
СЕВЕРНАЯ КОРЕЯ
КИРГИЗСТАН
Урумчи
ТАДЖИКИСТАН
Нанкин
Шанхай
Филиппинское Море
Восточно Китайское Море
Чэнду
Брахмапутра
Лхаса
Тайбэй
о.Тайвань
НЕПАЛ
ИНДИЯ
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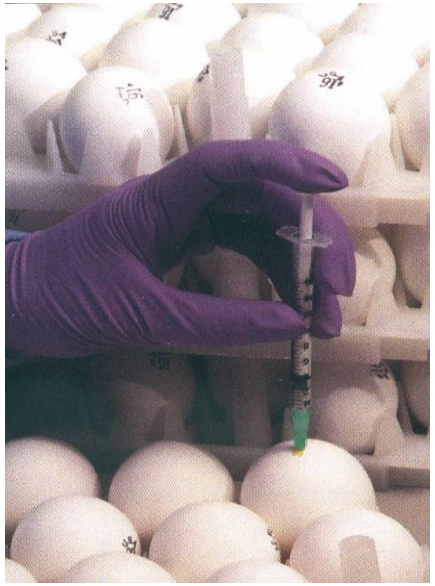
Меконг
БАНГЛАДЕШ
БИРМА
ВЬЕТНАМ
ЛАОС
ТАИЛАНД
о.Хайнань
ФИЛИППИНЫ
0 300 600 km
0 300 600 mi
LPAIV H9N2
2012
H5N1
clade 2.2 (2005-07)
H5N1
clade 2.3.2 (2009-2010)
H5N8
2014
H5N1
clade 2.3.2
2008
H5N1
clade 2.3.2.1a
Hubei-like
2013-14
H5N1
clade 2.3.2.1
H5N2
H5N6
LPAIVs:
H5N2
H7N9
H10N8
2013-14

Virus isolation& trials *in vivo*

Federal Centre for Animal Health
FGBI «ARRIAH»

Capabilities for Avian Influenza diagnosis

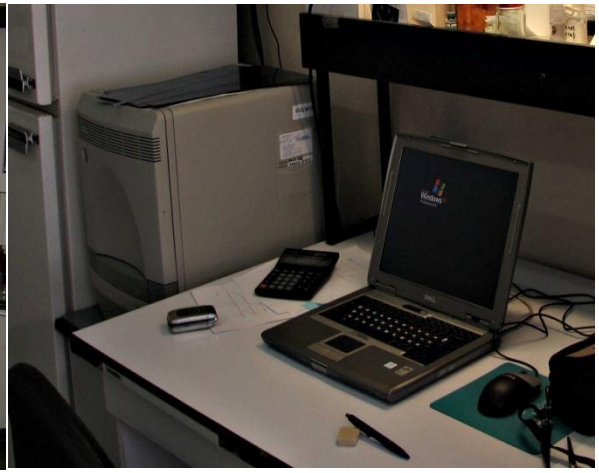


Sequence&Phylogenetic analysis

Serology (HI, ELISA)

RT-PCR (M,NP,HA,NA genes)

RRT- PCR



National Reference Laboratory for AI and ND
Animal facilities unit for challenge trials (BSL3)

Other Activities

- Development of new vaccines and studies on postvaccination immunity in some bird species
- Sera and antigens production

Wild birds samples investigation (2010-2013)

Avian group	PCR positive results type A	HPAI/ H5N1	Virus isolation	Total
1. Synanthropic birds	1	-	1	1512 - 49%
2. Wild ducks	53	-	16	519 - 17%
3. Dif. species (gull, quail…)	2	-	-	502 - 16%
4. Wild birds (unknown species)	-	-	-	239 - 8%
5. Other waterfowl (w. goose, g.c.grebe, bald-coot)	7	7	3	310 - 10%
Total:	63	7	20	3082

Avian influenza virus subtypes identified in the Russian Federation in 2010-2011

Avian Species	PCR positive results type A	AIV subtype	HPAI/ H5N1	Virus isolation
1. teal	15	4-H3N8, 2-H4N6, 1-H3+H4	-	7
2. mallard	8	2-H3N8, 2-H4N6	-	4
3. gadwall	4	1-H3N8	-	1
4. wild duck	2	1-H4N6	-	1
5. pintail	2	1-H4N6	-	1
6. pochard	1	1-H4N6	-	1
7. shoveler	1	-	-	-
8. great crested grebe	7	-	7	3
Total:	40	7-H3N8 7-H4N6 1-H3+H4	7-H5N1	18

Antibodies detection in wild birds in 2011-2013

A Subject of RF	Virus type/ Species	HI titers, log 2
Astrakhan	H5 / teal H7 / rook	4 4
Tyva	H5 / grebe H7 / grebe H7/ gadwall H7 / gull H7 / Cormorant	5 2-3
Kabardino-Balkaria	H7 / pigeon	3
Altayskii Krai	H5 / wild duck H7 / wild duck	2-3

H9N2 Avian influenza virus subtype identified in the Russian Federation in 2012

Isolate	Region	Date	Cleavage site	HI test	IVPI
A/chicken/Amurskii/3/12 (H9N2)	Amur region	07.02.12	PSRSSR_GLF	1:256	0.0
A/pigeon/Amurskii/22/12 (H9N2)	Amur region	27.02.12	PSRSSR_GLF	1:64	-

H5N1 introduction to Russia

June 2009, June 2010

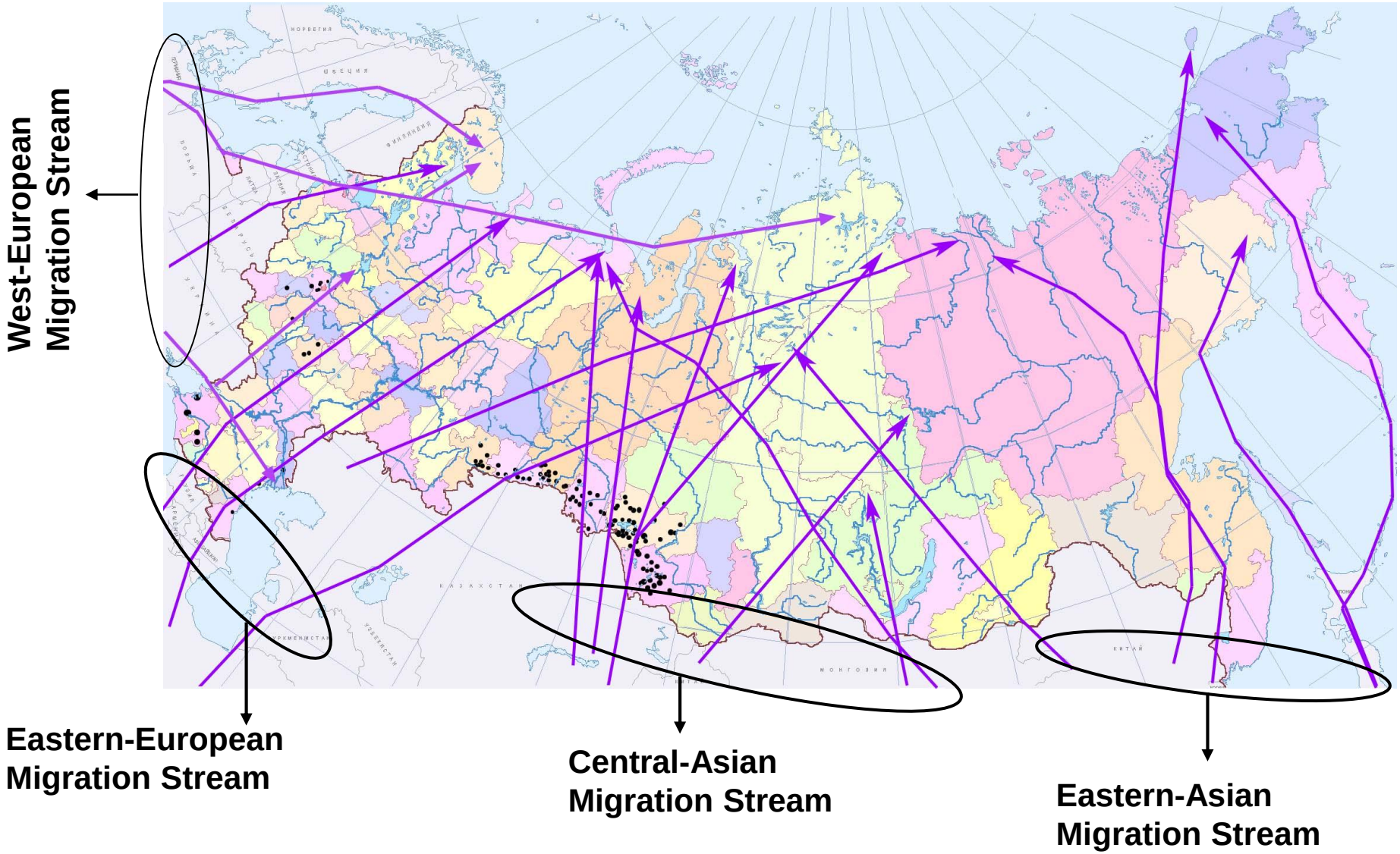

ХОВУ-АКСЫ
DIED 58 WILD BIRDS
RUSSIA
lake UBSUNUR
MONGOLIA
УЛАНГОМ
Species affected: Larus ridibundus, Tadorna tadorna, Podiceps cristatus, Anas clypeata, Mergus merganser.

A virus H5N1 genetically similar to 2008 Far East strain was isolated from wild birds found dead in Ubsu-Noor Lake, Republic of Tyva in June 2009 and June 2010

Wild birds sampled in Republic of Tyva. Ubsu-Noor Lake,

№	Bird species	English name
1.	**Серый гусь** *(Anser anser)*	Greylag Goose
2.	**Серая утка** *(Anas strepera)*	Gadwall
3.	**Краснонос. нырок** *(Netta rufina)*	Red-crested Pochard
4.	**Чомга** (*Podiceps cristatus)*	Great Crested Grebe
5.	**Чомга** (*Podiceps cristatus)*	Great Crested Grebe
6.	**Серая утка** *(Anas strepera)*	Gadwall
7.	**Баклан** (*Phalacrocorax)*	Cormorant
8.	**Озер. крачка (***Larus ridibundus)*	Black-headed Gull
9.	**Чибис (***Vanellus vanellus)*	Northern Lapwing
10.	**Чомга** (*Podiceps cristatus)*	Great Crested Grebe
11	**Чомга** (*Podiceps cristatus)*	Great Crested Grebe
12	**Серый гусь** *(Anser anser)*	Greylag Goose
13	**Серая утка** *(Anas strepera)*	Gadwall
14	**Серый гусь** *(Anser anser)*	Greylag Goose
15	**Серая утка** *(Anas strepera)*	Gadwall

Wild birds migration streams in Russian Federation



Samples from Arkhangelsk region

№	Bird species	Latin name	English name
1	Озерная чайка	*Larus ridibundus*	Black-headed Gull
2	Сизая чайка	*Larus canus*	Common Gull
3	Серебристая чайка	*Larus argentatus*	European Herring Gull
4	Голубь	*Columba livia*	Rock Dove
5	Галка	*Corvus monedula*	Western Jackdaw
6	Ворона	*Corvus corax*	Common Raven
7	Сорока	*Pica pica*	Eurasian Magpie
8			
9			
10			
11			
12			
13			
14			
15			

Samples from Vladimir region

№	Bird species	English name	Latin name
1	**Чирок**	**Eurasian Teal**	**Anas crecca**
2	**Вальдшнеп**	**Eurasian Woodcock**	**Scolopax rusticola**
3	**Ворон**	**Hooded Crow**	**Corvus cornix**
4	**Кряква**	**Mallard**	**Anas platyrhynchos**
5	**Кряква**	**Mallard**	**Anas platyrhynchos**
6	**Гусь белолобый**	**Greater White-fronted Goose**	**Anser albifrons**
7	**Выпь болотная**	**Eurasian Bittern**	**Botaurus stellaris**

Samples from Nizhniy Novgorod region

№	Bird species	English name	Latin name
1	Сова	Northern Hawk-Owl	Surnia ulula
2	Дятел	Lesser Spotted Woodpecker	Dendrocopos minor
3	Сорока	Eurasian Magpie	Pica pica
4	Ястреб	Hawk	Accipitrinae
5	Дрозд	Fieldfare	Turdus pilaris
6	Ворона	Hooded Crow	Corvus cornix
7	Бекас	Common Snipe	Gallinago gallinago
8	Галка	Western Jackdaw	Corvus monedula
9	Вальдшнеп	Eurasian Woodcock	Scolopax rusticola

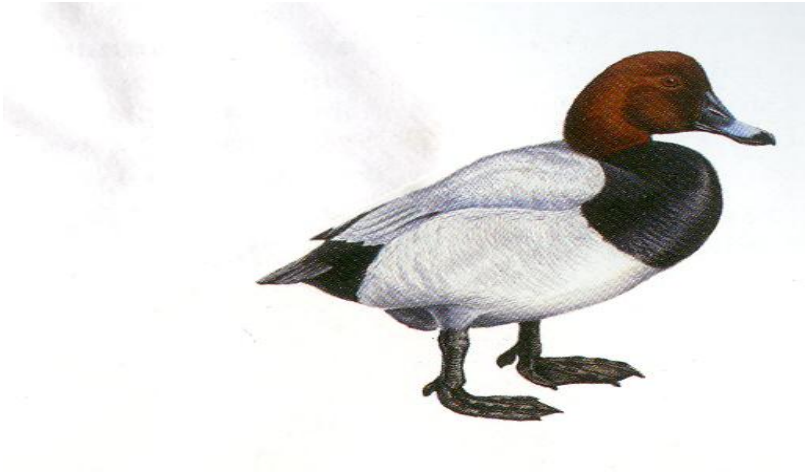
Samples from Krasnoyarskiy Krai

№	Bird species	English name	Latin name
1	**Рябинник**	**Fieldfare**	**Turdus pilaris**
2	**Овсянка обыкновенная**	**Yellowhammer**	**Emberiza citrinella**
3	**Большая горлица**	**Oriental Turtle Dove**	**Streptopelia orientalis**
4	**Ласточка-береговушка**	**Sand Martin**	**Riparia riparia**
5	**Тулес**	**Grey Plover**	**Pluvialis squatarola**
6	**Полевой жаворонок**	**Eurasian Skylark**	**Alauda arvensis**
7	**Кряква**	**Mallard**	**Anas platyrhynchos**
15	**Большая горлица**	**Oriental Turtle Dove**	**Streptopelia orientalis**


Novosibirskaya oblast`, Chany Lake
summer 2005

Key species in 2005-2006

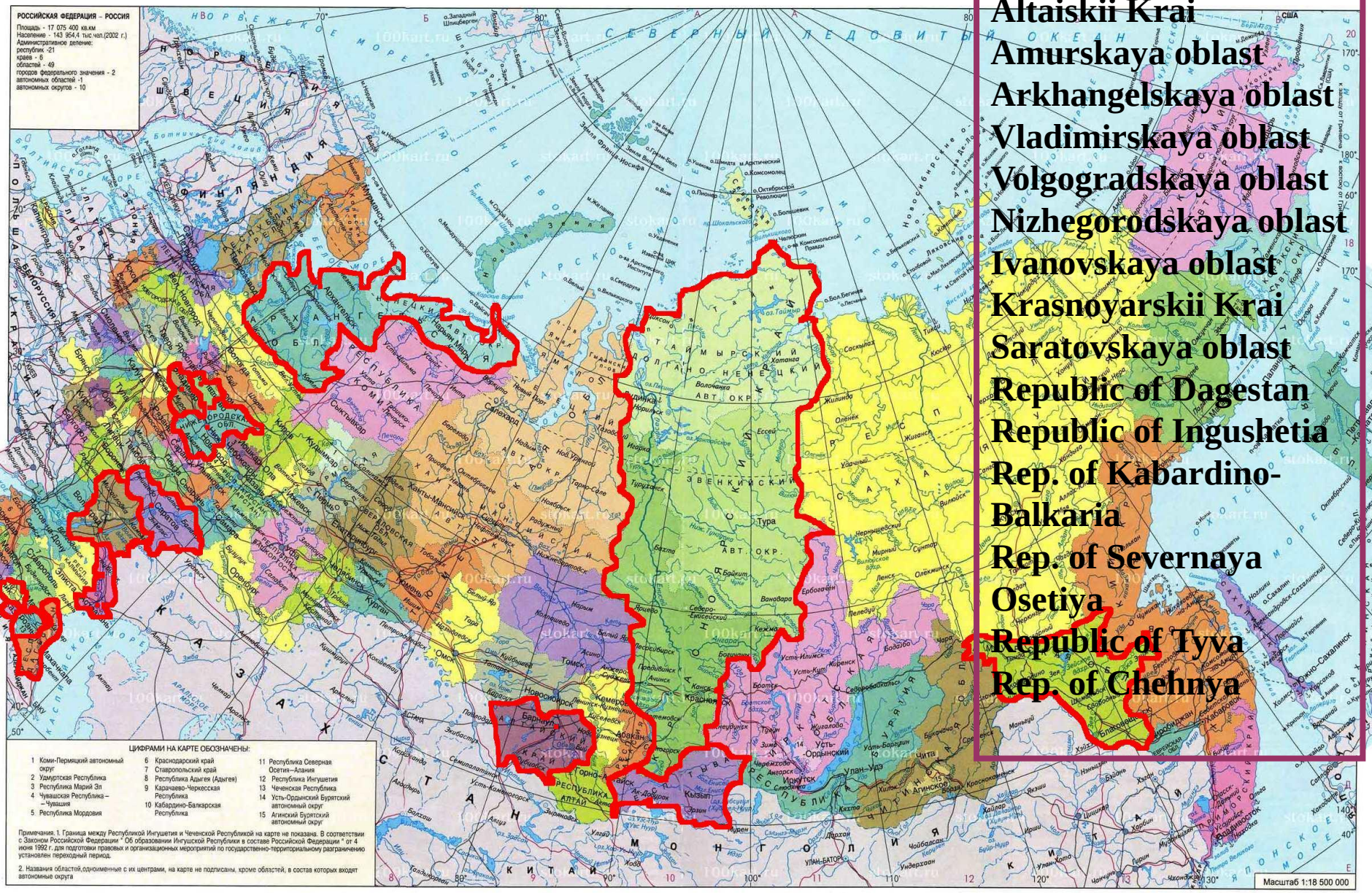
- **Aythia ferrina (Pochard)**
- **Whooper& mute Swans**
- **Podiceps cristatus**
  (Great Crested Grebe)



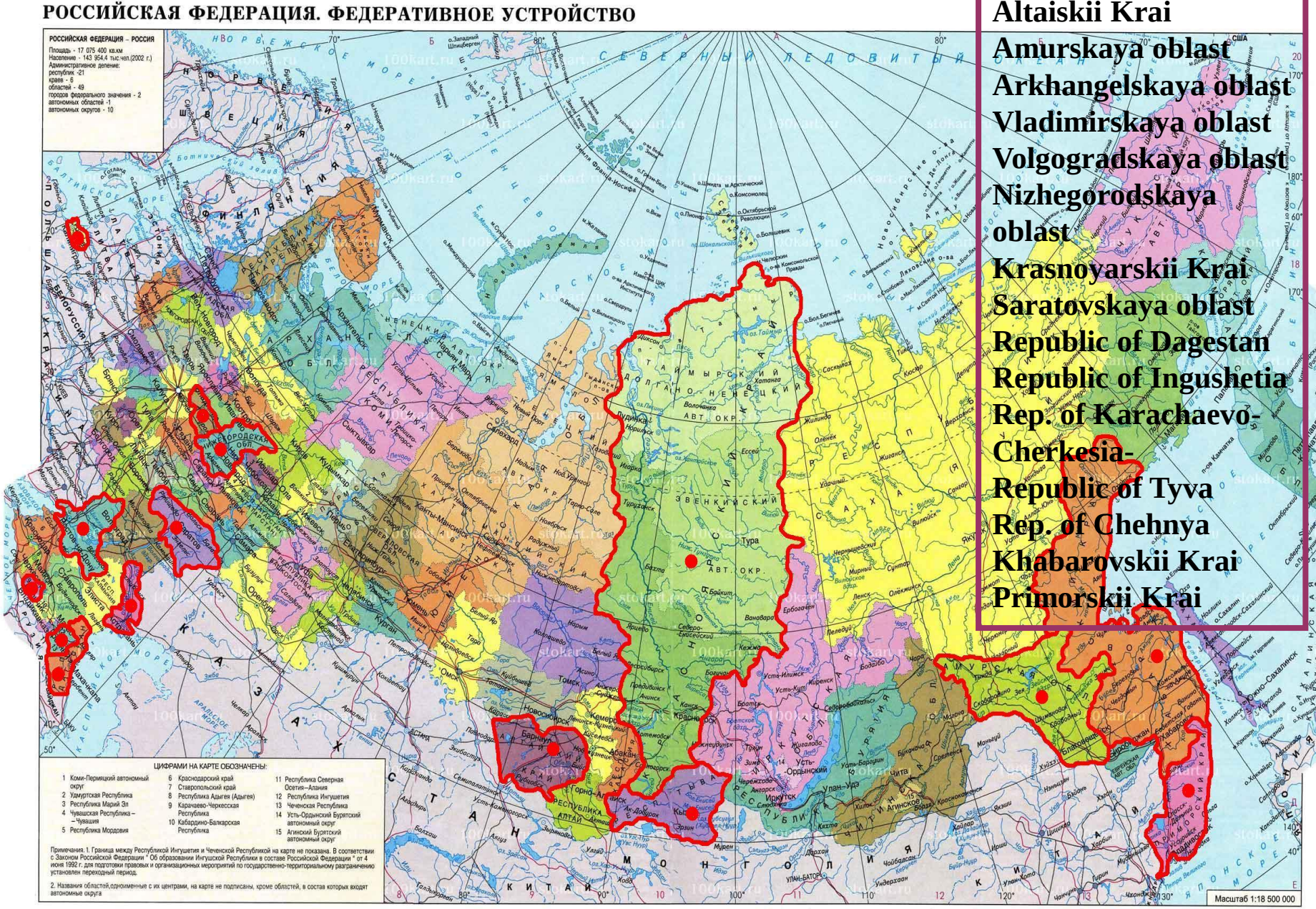
Baikal teal in 2014?

Region	Methods				
	ELISA	HI	PCR	Virus isolation	Total
Astrakhanskaya oblast	2000	90	100	100	2290
Altaiskiy Krai	700	40	50	50	840
Amurskaya oblast	1700	90	150	150	2090
Arkhangelskaya oblast.	500	50	100	100	750
Vladimirskaya oblast	2500	90	100	100	2790
Volgogradskaya oblast	1900	50	150	150	2250
Ivanovskaya oblast.	1150	50	100	100	1400
Krasnoyarskiy Krai	1500	50	150	150	1850
Nizhegorodskaya oblast	2800	90	150	150	3190
Saratovskaya oblast	1900	50	150	150	2250
Rep. Tyva	0	0	100	100	200
Rep. Dagestan	250	40	70	70	430
Rep. Ingushetia	200	30	60	60	350
Rep. Kabardino-Balkaria	200	30	60	60	350
Rep. Severnaya Osetia	100	20	50	50	220
Rep. Chechnya	200	30	60	60	350
Total	17600	800	1600	1600	21600

AI monitoring in 2013



State monitoring for AI and ND in 2014



Astrakhanskaya oblast
Altaiskii Krai
Amurskaya oblast
Arkhangelskaya oblast
Vladimirskaya oblast
Volgogradskaya oblast
Nizhegorodskaya oblast
Krasnoyarskii Krai
Saratovskaya oblast
Republic of Dagestan
Republic of Ingushetia
Rep. of Karachaevo-Cherkesia-
Republic of Tyva
Rep. of Chehnya
Khabarovskii Krai
Primorskii Krai

Laboratory network of Russian veterinary services

- **The laboratory network is based on 86 labs of Regions (oblast, krai, republic) and 21 Federal Interregional Labs**
- **The local labs provide initial diagnostics and sampling in cases the disease is suspected and surveillance in poultry and monitoring in wild birds**
- **Central Veterinary Laboratory in Moscow coordinates this network in poultry and wild birds monitoring for AI**
- **All positive samples are sent to Central Veterinary Laboratory, then to ARRIAH**
- **ARRIAH in Vladimir provides confirming tests and research**

Conclusions

- Despite quiet current situation we are still far from optimistic prognosis
- Control measures including:

  - limited preventive vaccination and emergent ring vaccination/revaccination

  - inspection of commercial poultry farms for biosecurity requirements

  - epidemiological monitoring of poultry flocks

  - epidemiological monitoring of wild birds

  will be continued for near years